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SCEPSIS SCIENTIFICA*

BY

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The habit of mind of any scientist is sceptical in so far as he is, or should be, unwilling to admit the truth of anything without proof. The antithesis is a habit of faith in beliefs, usually expressed in abstract ideas, that make so strong an appeal to the individual as to require no proof; to him they seem self-evident. The habit of faith is one shared by scientists, who must accept teachings and beliefs that they have not personally inquired into. There is this difference, that the latter know they can obtain verification of the facts if they turn to the original experiments or calculations. If after that they feel sceptical they will try a rigidly identical experiment themselves or will devise new ones to test the results previously given. Belief in abstractions, on the other hand, can only refer for confirmation to others, contemporary and past, who attest them with equal or greater vividness and force.

The definition of the scientific outlook just given might be commented upon by philosophers. They might somewhat cynically say that in history it was observable that individual scientists had seemed to be readier to accept the truth of personal researches than that of others. They might observe also that the answer to an experiment is always a special answer since it is conditioned by the nature of the experiment itself, and that its applicability in a chain of reasoning depends on the choice of that particular experiment out of all possible experiments. They would almost certainly object that the word "truth" was misused, for science has nothing to do with truth in the sense in which scholars for centuries have employed the word—"correctness" or "accuracy" would be better. The amended definition would then run that a sceptical habit of mind is proper for scientists with reference to their own as well as to other people's work, that it embraces unwillingness to accept without adequate proof the correctness of a certain type of observation, usually with limited aim; and it might be added that this proof should preferably be quantitative, should take the form of measurement.

Essential Irrationality of Science

The philosopher would perhaps go on to add his own sceptical reflections on the limitations of the scientific method and of the orthodox scientific mind. He would find it difficult to express himself better than A. N. Whitehead or to add anything to what that philosopher wrote in his classic *Science and the Modern World*. He there speaks of the essential irrationality of science, by which he means its pursuit of crude and brutal fact and imperative acceptance of fact irrespective of its having any recognizable meaning.

This charge of irrationality is at first a little shocking, but it is valid For science takes a special pride in the necessity for such acceptance and is particularly suspicious of first causes and purpose. It is simpler when the results of experiments or biological observations are in line with orthodox beliefs; when they are not, the observer must still record them even when they puzzle him, are even more "irrational" than he expected. Within its own framework science presents mental difficulties, for clearly the scientific outlook requires a discipline of mind not quite natural or intuitive. There is a possibility then that the discipline may prove to be too rigorous. We can find two very different examples of suggestions for minimizing the risks of personal bias. The first is inherent in the Baconian notion of the value of the collective brains of a scientific committee. It was perhaps a Lord Chancellor's idea of science, as William Harvey, his doctor, might have said of it, recalling what he had said of Bacon's philosophy. An entirely different and individual concept, that of ridding the observer of all preconceptions and emotional content, was that of François Magendie 200 years later.

Magendie claimed that he went into the animal laboratory with a head empty of any expectation of what he would discover. He had two hands, two eyes, and no brain, or, rather, no mind. It would be tedious to explore the labyrinths of Magendie's illusions; he could not possibly have been as ingenuous as he thought he was, a kind of Parsifal transplanted, the wise fool of the laboratory. None the less it is quite certain that Magendie's ideal is theoretically necessary if the observer is to maintain the discipline that science demands. Unless extreme care is taken the experimenter or inductive reasoner may find himself falling into the errors which Olmsted finds in Brown-Séquard's later work. He no longer asked, says Olmsted, "How will Nature act under certain conditions?" but, "What conditions can I set up so that I can demonstrate to others the way I think that Nature will act?" The classical dilemma of science emerges: the necessity for an idea, a preconception, a theory which is to be put to experimental test, and the consequent danger that the manner in which the experiment is conducted may prescribe a wanted, an emotionally desired, result.

It is not without interest to seek from contemporary sources further amplification of the necessity seen at the beginning of the scientific era for three things—freedom to submit anything whatever to sceptical criticism, the danger of the scientist being deceived in his own experiments, and recognition that the scientific method could not expect to solve all the problems that might be put to test. Let us listen to some of those contemporaries.

Joseph Glanvil

Nearly 300 years ago there was published a book bearing the title of this article. It was by Joseph Glanvil, who died too young; it contained a reprint of an essay that later became famous—"The Vanity of Dogmatizing or Confidence in Opinions," originally printed in 1661, the year in which

*The substance of an inaugural lecture delivered to Leeds University Medical Faculty.

Newton entered Trinity College as an undergraduate. It was also the year of publication of Robert Boyle's *Sceptical Chymist*, the book that laid the foundations of modern chemistry. Glanvil desired, apart from the pleasure that he no doubt derived from a manner of writing so felicitous that it made him notable even in an exceptionally gifted century, to attack the belief that the old ways of thinking were the best. The investigation of nature started to flower with what now looks like astonishing abruptness in the sixteenth and seventeenth centuries. It found itself immediately in conflict with rationality, with a whole congress of scholastic erudition hammered out by thinking, by meditation, by logic, and by reason from suppositions not subjected and often not amenable to test. The perfection of the logic, the impeccability of the argument, raised a superstructure so imposing that the fallacy of the premises that were its foundation was not perceived. So great had been the success of these intellectual exercises that the answers to all questions were already known, or so it seemed.

On the other hand, the discoveries and propositions of Copernicus, Gilbert, Galileo, Kepler, Harvey, and Robert Boyle had been arrived at differently; what was more, Descartes 30 years before had announced in the *Discours de la Méthode*, that momentous charter for independence and certainty in thinking, the overthrow of mediaeval learning as an active force. Here was a new age dawning, created by a new method. The new method was science, the object of which was to examine data and to report on them without prejudice and particularly without prejudice emanating from ancient and dogmatic teaching; for, as to that, "What hath it been," said Glanvil, "but a pretty toy in an Heiroglyphick; a very slender something in a Fable; or an old nothing in a disputation."

The battle in which Glanvil was engaged was won so decisively by science that in our own times the teachings of the mediaeval thinkers have become more the property and happy hunting-ground for the scholar, the humanist, or the epistemologist than for the scientist. None the less the educational background of the scientist was furnished by the universities and monasteries, which in late mediaeval times were the abodes of men of quite exceptional intellect. That they were engaged in studies which later times rejected should not obscure the fact of their quality. That quality was there to be deflected little by little, a process fortunately not to this day completed, into the new paths of science. Nearly all the greatest scientists gave some acknowledgment that the wonders of the natural world which they had done something to unfold increased their reverence for God. These scientists therein showed their deeply rooted unity with the body of thought from which they sprang, had corrected but not destroyed.

Francis Bacon

In our own generation the average scientist is not permitted to do more than thank, not God, but his parents for the happy consortium of chromosomes with which they have unwittingly endowed him, so great has become the gap between us and that monastic thinking in which scepticism was barely permitted. But was the mind the supremely reliable tool that scholars and savants had believed it to be? In England, Glanvil, like Descartes, had been antedated by Francis Bacon. His *Novum Organum*, outlining further the ingenious but impossible method for the advancement of learning already mentioned, had advocated the cutting of strings that bound his age too firmly to the past. He proclaimed his doubts on the speculative and reasoning powers of the human brain, belief in which had been the discovery and joy of the Greeks. Brilliant indeed had been their use of the new weapon, but it was clear that speculation could lead to absurdity.

Bacon mistrusted the powers of the mind to such a degree that in the *Novum Organum* he exclaimed, "And so we must add not wings but weights and leads to the intellect so as to hinder all leaping and flying." The wit of man, he said, when it worked on facts, on matter, was limited by its material and could indulge in no great excess. But when it came to pure thought—that was where the danger lay: "If it work upon itself as the spider worketh his web, then it is endless, and brings forth indeed cobwebs of learning, admirable for the fineness of thread and work but of no substance or profit" (Preface to *Advancement of Learning*).

Bacon gave further examples of the mind's weaknesses—it presented mixed qualities: "Facility to believe, impatience to doubt, temerity to answer, glory to know, doubt to contradict, end to gain, sloth to search . . . these and the like have been the things which have forbidden the happy match between the mind of man and the nature of things, and in place thereof have married it to vain notions and blind experiments" (*Praise of Knowledge*). Wilfred Trotter has, within our lifetimes, re-expounded the Baconian scepticism in language more suited to our present-day ears, with a compact brilliance and inventiveness that at least equals the original. Trotter's proposal that minds needed calibration to take account of inherent and acquired bias was as engaging as impossible. Nevertheless, the idea of necessary calibration remains a useful short statement that we need at all times to remember. Trotter's deduction that ideas which aroused emotion were the most dangerous because the most violently defended was extremely important.

Glanvil's period denied him the concept of emotionalism—it would have been called passion; but he put forward a very similar idea: "Do what we can," he said, "Prejudices will creep in and hinder our Intellectual Perfection: And although by this means we may get some comfortable allay to our distempers, yet can it not perfectly cure us of a disease that sticks as close to us as our natures." In many respects this was no more than an old theological doctrine, one befitting the rector of the Abbey Church at Bath, to whom all man's imperfections could be explained by the Temptation and Fall. Bacon subscribed to the same belief. This made some frailties inevitable, inescapable, but man's tendency to err about everything was not hopeless if he would stick to facts. Science was useful and as exemplified by the new Royal Society, of which Glanvil was a Fellow, might do much to correct some of man's mistakes.

World of Ideas

It is interesting to observe how quickly all philosophers came face to face with the problem of mind and inevitably with that of brain. Berkeley, with his proposition that nothing existed save as an idea in the mind, is a ready, if the extreme, example. His superb sentences carried almost complete conviction: "Some truths there are so near and obvious to the mind that a man need only open his eyes to see them. Such I take this important one to be—viz., that all the choir of Heaven and furniture of the earth, in a word, all those bodies that compose the mighty frame of the world, have not any subsistence without a mind; that their *being* is to be perceived or known." It seemed almost an anticlimax when David Hume dismissed Berkeley's statements with the laconic remark that they "admit of no answer and produce no conviction." The great Dr. Johnson misunderstood Berkeley when he kicked his foot violently against a stone and said, "I refute him thus!" for the Bishop would have retorted that the solidity encountered and the pain felt were still no other than ideas in the mind.

Attractive though the ideal theory was, man's instinctive belief in the permanence and reality of a world which tangibly and visibly exists whether he is there to see it or not has overtopped the doctrine of pure ideas. We believe that things still exist even in our absence because experience has taught us that this is so, even though the strictest philosophy must forbid us to assume it. A modern admonitory example of the possible deception by the senses is given by astronomers, who tell us that the light that reaches us from many stars has been so long on the way that the star from which it comes may now be dead or destroyed. That has not yet been proved by example, and even if it were our people, rightly empirical, are content to wait until such an event affects their lives before they adjust their thinking to consequences from the distant empyrean.

Alexander Pope was more in touch with the first principles when he defined the proper study of mankind. For such close-range corrections within the reach of

everybody are easily made. We recognize that the world may look the same or a little different to other people ; we know from the cell layers in the retina and from the presence or not of a chiasma that it must look different, sometimes very different, to other animals, both in colour and in perspective. We admit that our senses may mislead us, that what in the distance we thought was a man is a bush, and so forth ; but we have spent our lives from our cradles in correcting these errors and have developed a built-in theory of probability that minimizes mistakes. Man only rarely raises his eyes to the firmament, and when he does it with scientific intent he finds mathematics there. He can conclude that the Universe was constructed by a Supreme Mathematician, one who had pre-knowledge of the discoveries of Newton, Einstein, Planck, and Rutherford and then hid them in nature to give reason for a terrific university game of hunt-the-slipper. But we can be sure, with Eddington, that the mathematics was not there until man put it there.

Kant in one of his more intelligible passages rightly held that space and time are not inherent in the objects of our knowledge but are elements in the knowledge itself—i.e., we put them there by our methods of observation. None the less, it has to be admitted that there is something to measure and that mathematical accounts are almost the only ones so far available. Man looks at the Universe, and if the Universe looks back at him he does not know, nor, except in rare moments, does he greatly care. There have been those so impressed by the vastness of space that man has seemed to them an unimportant object. It cannot be shown that this deduction has had any recognizable effect on those thinkers' manner of living or their relation with their fellow men. It is a view to point an argument or to be subject matter for a reverie. Man remains the most important subject in the world ; his own nature and that of the furniture of the earth provide him with urgent problems enough.

The Brain and the Mind

Philosophy has agreed with the doctors that whatever mankind studies he has only one tool to use, his mind. It is the instrument of progress. We have seen how fallible its qualities, especially when attempting to make a right use of knowledge, have been held to be, and that not only recently but for centuries. It would be easy by presenting passages from Descartes' and Hume's writings to show two great thinkers struggling with this problem, the use of knowledge, and after long meditation concluding that the only way in which they could advance was by rejecting everything that they had ever learned and beginning anew. This they tried, and it was not the solution they required. Prejudices, emotions, illogical successions of reasoning would creep in.

Could anything be learned from the structure and workings of the brain ? To this old question we have no modern answer. It had early been a matter for wonder that a cold, grey, soft mass such as the brain could be the seat of those powerful mental qualities that can so delight and inform us—and so deceive us. In its gross morphology the brain is not difficult to understand, but it yielded grudging fruit to the early experimenters. It has required the two centuries after 1740 to formulate the nervous impulse from the mediaeval concept of the animal spirits. And except that we admit now that we have no reason to believe that mental activities are carried out by processes very different from the impulses in the peripheral nerves and spinal cord, we still do not know how they produce the aggregate of mental processes that we call mind. That was Sherrington's conclusion. In that failure we greatly disappoint the philosophers, who imagine that we know more than we do, and, what is worse, build on that belief.

[*Passages on growth of knowledge of nervous impulse have been omitted.*]

The advance of basic knowledge of the brain's structure and its working could be made to apppear as a swiftly moving panorama of events that were in reality long and laborious in the enacting. It could be made to read like a smooth tale of success, a scientific rise from log cabin to White House. We know that what really happened is what happens now, that one man here possesses a piece of information, a man there another. It may be a long or a short while before it is realized that they fit together to make something else. But on the matter of mind it may seem strange that the great philosophers who have communed and speculated about man, his meaning and his purpose, should have known so little of the intimate mechanisms of integration in the brain.

The great innovators in psychology—Freud, Jung, and Adler—have shown no more interest in structure than Plato. It is actually of less moment than might be imagined ; for the definition of correct method, of what we can hope to know, how we know it, what are our lets and hindrance, and what is beyond knowing, requires next to no neurological knowledge. It was no detriment, for example, to David Hume, who, supposedly the arch sceptic, comes nearest to the scientist's ideal of a philosopher in his axiom that given a cause we cannot foretell what the result will be unless we have previous experience of that cause acting in rigidly identical circumstances. This is pure science. The difficulty is that causes do not arise in isolation but, too often for our composure, derive from events further back again. Generalized, Hume's doctrine is expressed by saying that we know nothing except by experience—again the basis of pure science. Distrust of dogma, of far-reaching planning based on a concept, is a characteristic of British political and philosophical thinking, as Bertrand Russell has recently so brilliantly demonstrated

Application of the Scientific Method

What is the use, we say, of a logician's theory neatly pursued when experience has taught us that so many adventitious variables will force their way in. Better far not to attempt to see too far ahead ; better to correct the bias as each variable appears. That, too, is the method of science. Are we to infer that speculation is never permissible in science ? By no means. The difficulty is to get the dosage right. Science, at conceptional level, is as speculative as art ; every good piece of research begins as an idea coming unsought into a mind. " All the thinking in the world," said Goethe, commenting on someone's remark that thinking is so difficult, " does not bring us to thought ; we must be right by nature, so that good thoughts may come before us like free children of God, and cry, ' Here we are! ' " We know not how this is, but in its highest form the inspiration is the same as that which visits poets and artists. The difference lies in the method applied to the idea.

Science is more fertile than art in suggesting trains of thought with one thing arising out of another. It does not do this smoothly without pause nor in a straight line, for not only may it seem more profitable and enlightening to swerve into a side-chain but something may be discovered that casts doubts not so much on the main truth of the argument as on its being the whole truth and sends us back to examine the beginnings anew. This happened, of course, classically with Newton, and it is unlikely that Einstein's correction will stand permanently unaltered. Hence all scientists must harbour, as most of them do, a grain of scepticism in their composition. To be too great a sceptic is not a sign of greatness, for it is easier and less laborious to doubt than to discover truth. Reflection suggests that the

only sciences which have succeeded in producing immediate conviction and durable results are mathematics and those into which mathematics enters to a very great degree. The biological sciences are more difficult because of their incalculable variables. But we advance none the less, step by step.

When we look back we can be impressed by the ignorance that was our forefathers'. The mathematicians of Elizabethan times were totally ignorant of the quantum theory, of nuclear physics, of wave mechanics. That is scarcely 400 years ago. What will they say of us 400 years from now! We are aware of vague discomforts in our minds about so many things. So must they have been. Until we can get our uneasinesses to the point of crisp formulation they admit of no answer, for we cannot investigate them. Let us not therefore laugh too loud at our fathers lest posterity overhears us! Their ignorances were of things that they could not have known; they lacked the interlocking discoveries and precision instruments that little by little advance learning. This is implicit in all that I have said of the nervous impulse and the cellular nature of the nervous system and the body. It is true of chemistry, physics, and astronomy.

It was nearly 300 years before instruments of sufficient delicacy were available to confirm the parallax of the fixed stars which the Copernican theory of the earth's motion demanded. It would be absurd to imagine that progress in instrumentation is a process which has now ceased, that further improvements will not disclose our present ignorances. We can be very sure that there are a dozen things under our noses which we misconceive or do not even see. The greatest source of error lies in our having explanations that satisfy us or with which we make do because we can see no other. That was where our forerunners came to grief, though I deprecate such a manner of expressing it. It is unquestionably where we ourselves shall be found to have erred. Our greatest ignorances must by definition be those of which we are unaware. Wilfred Trotter speaks of our natural resistance to new truths, our battle to throw them off at once because they irritate like an acid or sting. That seems to be particularly so when we are satisfied with what we already know of the subject. When our minds are vacant of explanation we seem to be extraordinarily gullible, ready to accept any theory, however nonsensical.

The Emotions in Science

Whatever means science theoretically should use, the scientist is a man more imaginative than Bacon would allow or Magendie would admit. He does require a presupposition which it is his intention to investigate. He is in fact a good deal more rational, more emotional, in a word more human, than argument can hold him to be. Hence his scepticism must be wilful. There have been important scientists who have appeared to maintain a scrupulous exactness in their researches but who have displayed emotion, bias, prejudice, and temper in their pronouncements on other subjects, notably on politics. It is difficult to believe that none of these qualities are to be found in their scientific work. Everything that a scientist does must have a personal flavour and be subject to those vagaries which personality implies. The intellectual cold purity of scientific work, something that is like a flame without heat, is a supposition without possibility of realization. Orderly scepticism is a discipline, not an intuitive possession; the proper name for the intuitive variety is prejudice.

There are other large fields of knowledge besides science: there is knowledge to be gained from literature, history; there are the arts: there is philosophy that embraces all kinds of knowledge. In these others the emotional side of men's nature is permitted a freer rein, and in the arts its fullest development is positively demanded. Men cannot lead contented lives unless they store their minds with goods bearing different kinds of trade-mark. There are many who believe that scientific certainty is not the only kind, who would agree with Descartes that they could recognize some ideas as so clear and so distinct that they brought instantaneous conviction and were immediately acceptable as truths. But unless they can be demonstrated, can be shown to be indestructible on attack, they must remain truths only for the individual who holds them. This seems a depressing conclusion, however well it may explain man's permanent liability to disagree with his fellows.

Conclusion

However, it is, as Glanvil would have said, "more perpendicular to our discourse" to conclude that our task in keeping emotions in control in science is difficult, since they are so permissible in much else that occupies our thoughts, colour our lives, and are at all times ineradicable. The rules that we live by have been made by experience as curbs on unfettered emotional behaviours. The rules of science have a shorter history, but are in the main of the same kind narrowed by a sharper focus to a different end. We have seen that better knowledge of the brain gives us no hope for lenses that will automatically correct the astigmatism of our minds. Let us then live our lives according to rules of historical experience, and in our scientific thinking let them be tempered, but with our actions not paralysed, by scepticism.

THE BACTERICIDAL ACTION OF STREPTOMYCIN

BY

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Streptomycin, an antibiotic derived from *Actinomyces griseus*, and discovered by Schatz, Bugie, and Waksman (1944), owes its therapeutic value to action on bacteria which are insensitive to penicillin, notably *Myco. tuberculosis* and many species of Gram-negative bacilli. The original description credits it with "strong bactericidal properties" without giving evidence for this statement. Several subsequent authors, including Hegarty, Thiele, and Verwey (1945), Hamre, Rake, and Donovick (1946), Strauss (1947), and Smith and Waksman (1947), have shown that low concentrations added to susceptible bacteria in a nutrient medium cause a slow fall in the viable count; it has also been observed that in a non-nutrient medium there is no such effect unless a considerably greater concentration is used. The only published example of a test employing a high concentration in a nutrient medium is an experiment by Helmholz (1945), who inoculated the urine of a patient under treatment with streptomycin and containing 1,330 units (micrograms) per ml. with various bacteria, and found that they were all killed within one hour. Since concentrations of this order can easily be attained in the urine, and local treatment can produce similar conditions elsewhere, it is clearly of interest to know more about their effect on bacteria.

In so far as the action of a chemotherapeutic agent is bactericidal, that action must be influenced by the various factors such as concentration, temperature, medium, and

inoculum size, which are known to affect chemical disinfection generally. Since there appears to be little information on these points, the following experiments were undertaken to provide it.

Method.—The organism used was *Staph. aureus* (Oxford H strain), the inoculum being derived from a 24-hour culture in ox-heart-extract peptone broth. The basis of the test mixture was usually the same broth, to which was added streptomycin and such an amount of culture as to give an initial viable count of about 50,000,000 per ml. Tubes or flasks containing these mixtures were maintained at the desired temperature, usually 37° C., in a water-bath, and viable counts were performed at intervals, either by the conventional method of pour plates made from decimal dilutions or by the surface viable count method (Miles, 1937), which is more economical in medium, and quite accurate enough when large changes in population are taking place.

Bactericidal Action

The Effect of Concentration

It is evident from Fig. 1, showing the fall in the viable count over a period of eight hours produced by four different concentrations of streptomycin in broth at 37° C., that streptomycin is bactericidal! An original population of 95,000,000 per ml is entirely extinguished by 20 μg. per ml. in eight hours, by 50 or 100 μg. per ml. in four hours,

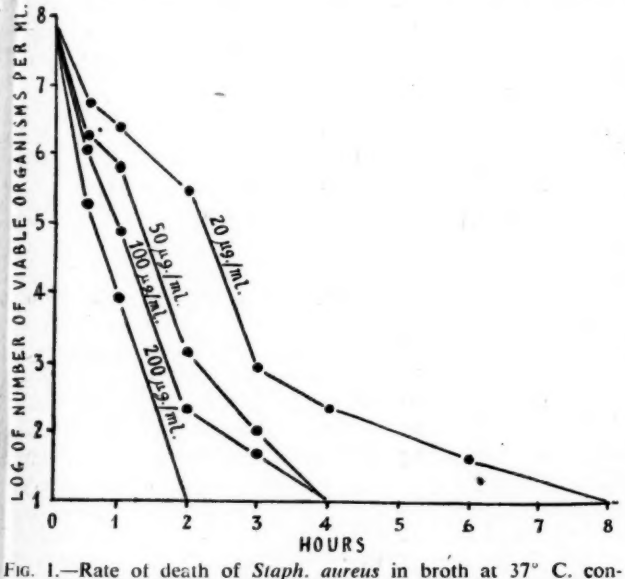

FIG. 1.—Rate of death of *Staph. aureus* in broth at 37° C. containing 20, 50, 100, and 200 μg. of streptomycin per ml.

and by 200 μg. per ml. in two hours. It also appears that the death rate varies with the concentration of the drug; this is still more evident in Fig. 2, in which it should be noted that the time scale covers a period of only two hours. Here a concentration of 200 μg. per ml. has not quite extinguished a rather larger inoculum within that period, but 2,000 μg. per ml. has an exceedingly rapid lethal action. Counts made at short intervals, not all of which are plotted on the graph, showed a marked fall within one minute and a mortality of 99.8% within ten minutes. How soon this mixture was completely sterilized cannot exactly be stated, because cultures made from the first dilution of it contained too much transferred streptomycin to permit growth. It can, however, be stated that the number of survivors per ml. after 20 minutes was less than 5,000 (mortality of over 99.995%).

The action of streptomycin thus differs radically from that of penicillin, which is not accelerated by increase in concentration above a minimum level. I found three years ago (Garrod, 1945) that a concentration of 1,000 units of grossly impure penicillin per ml. was actually less rapidly bactericidal than one of only 1 unit per ml., owing presumably to the retarding effect of some impurity. On the other hand, the LT 50 (time required to kill 50% of

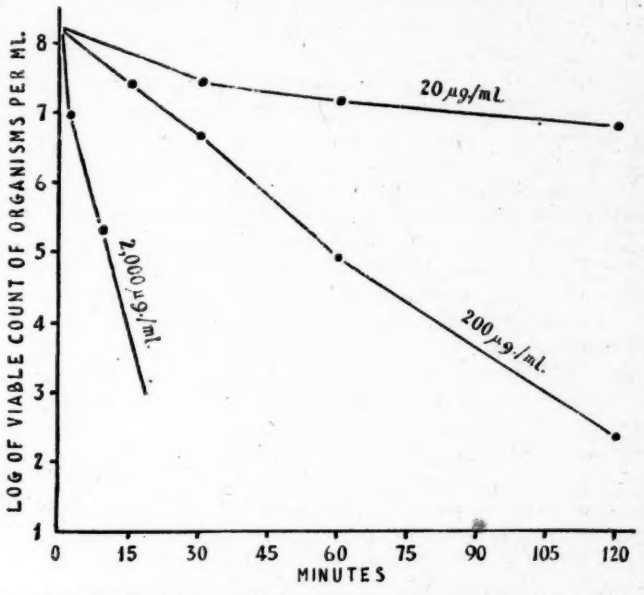

FIG. 2.—Rate of death of *Staph. aureus* in broth at 37° C. containing 20, 200, and 2,000 μg. of streptomycin per ml.

the inoculum) of a sample of 85% purity—the best then available—was between 100 and 89 minutes for all concentrations tested from 1 to 1,000 units per ml. I have recently repeated this experiment with pure penicillin G, and the results are shown in Fig. 3. The fall in the viable count produced by concentrations of 1, 10, 100, 1,000 and even 10,000 units per ml. is so similar that the graph is too tangled for its individual lines to be labelled or even followed clearly. It will also be noticed that this lethal effect is much slower that that of even moderate concentrations of streptomycin. (It appears in this experiment with pure penicillin G to have been even slower than that usually produced by commercial penicillin. This point has not been further investigated, but if such a difference were found it would be of interest in view of recent observations on the therapeutic inferiority of the pure product.)

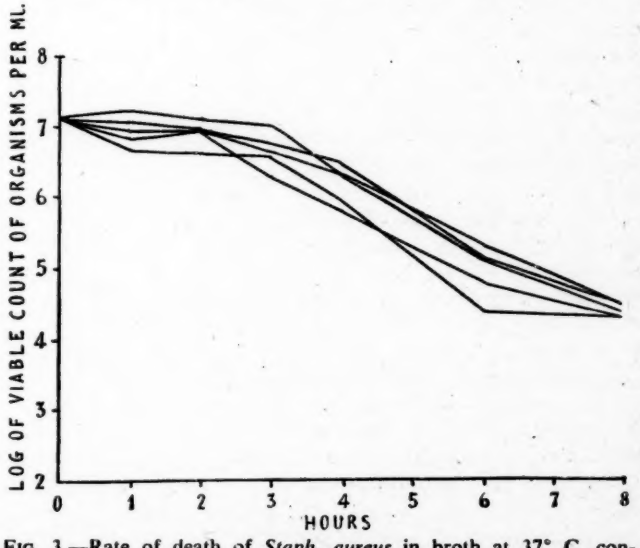

FIG. 3.—Rate of death of *Staph. aureus* in broth at 37° C. containing 1, 10, 100, 1,000, and 10,000 units of pure penicillin G per ml.

That streptomycin in higher concentrations is rapidly lethal is of practical as well as theoretical interest; an example of the former will be mentioned later.

Effect of Temperature

All bactericidal action is accelerated by increase in temperature, and streptomycin forms no exception to this rule. Fig. 4 illustrates the results of an experiment in

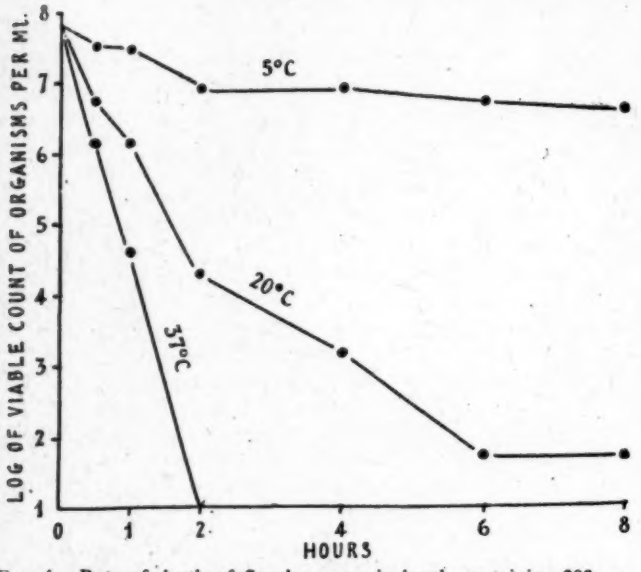

FIG. 4.—Rate of death of *Staph. aureus* in broth containing 200 μg. of streptomycin per ml. at 5°, 20°, and 37° C.

which the effect of 200 μg. of streptomycin per ml. on *Staph. aureus* in broth was observed simultaneously at 5°, 20°, and 37° C.

Effect on Different Species

The effects observed are not peculiar to staphylococci; Fig. 5 shows the death rate of *Bact. coli* and *Str. pyogenes* in comparison with that of *Staph. aureus* under the same

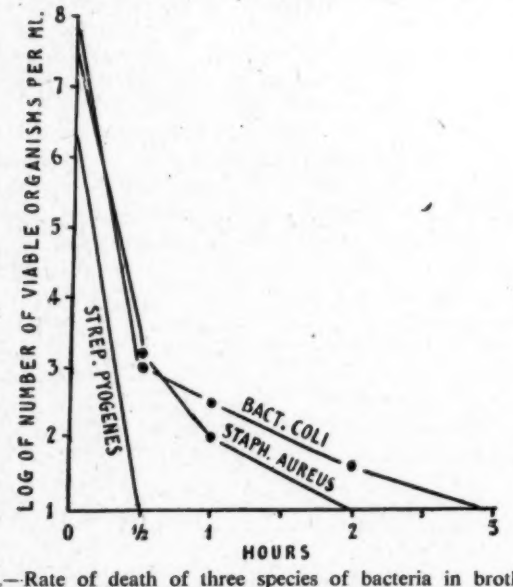

FIG. 5.—Rate of death of three species of bacteria in broth containing 200 μg. of streptomycin per ml. at 37° C.

conditions (200 μg. of streptomycin per ml. in broth at 37° C.). Slight differences between the rates of disinfection in this experiment should be disregarded; the susceptibility of different strains within a single species is much more variable than susceptibility to penicillin. It is stated (Report, 1946) that the minimum concentrations of streptomycin required to inhibit growth are 0.5 –> 16 μg. per ml. for *Staph. aureus*, 2.0 – > 16 for *Str. pyogenes*, and 0.3–3.75 for *Bact. coli*; the rate of disinfection presumably varies correspondingly, and the behaviour of single strains is therefore not exactly representative of the species as a whole.

Effect of the Medium

In all the foregoing experiments the medium was broth. In order to determine the effect of other media, broth culture of *Staph. aureus* was thoroughly washed (centrifuged three times and resuspended in saline); when such a suspension was added to defibrinated blood or serum containing 200 μg. of streptomycin per ml. at 37° C. the rate of fall in the viable count approximated closely to that observed in broth. In urine (sterilized by filtration and adjusted to *p*H 7.4) the effect was similar but less rapid. On the other hand, washed culture added to saline containing 200 μg. of streptomycin per ml. was completely unaffected; the viable count, as in the saline control containing no streptomycin, remained almost stationary throughout the eight-hour period of observation.

In view of the finding of Strauss (1947) that higher concentrations are bactericidal even in a non-nutrient medium, this experiment was amplified as follows. The same inoculum of washed *Staph. aureus* was added to four media, giving an initial viable count of approximately 50,000,000 per ml. In broth containing 200 μg. of streptomycin per ml. the count fell to *nil* in one hour. In saline with or without 200 μg. of streptomycin per ml. it remained stationary. In saline containing 2,000 μg. of streptomycin per ml. it fell in 30 minutes to 850,000, and thereafter fluctuated round this level; individual colony counts were inconsistent, suggesting that the cells were in a condition in which chance affected their capacity for growth. It thus appears that very high concentrations of streptomycin are incompletely and irregularly bactericidal in a non-nutrient medium.

In its dependence on a nutrient medium for rapid bactericidal action streptomycin resembles penicillin, but there is a striking difference in their effects. That of penicillin becomes evident only after a lapse of time amounting to about one hour, during which one generation of division may occur (Chain and Duthie, 1945; Schuler, 1945). That of streptomycin is immediate: under favourable conditions it begins within one minute and may be far advanced in ten minutes. So far as I am aware, no other bactericidal agent having so rapid an effect is dependent on a nutrient medium for its efficacy. This peculiar behaviour will have to be taken into account in any hypothesis about the mode of action of streptomycin.

It was not considered necessary to study the effect of *p*H, since it has been amply demonstrated by Abraham and Duthie (1946) that alkalinity (*p*H 8.0) favours the action of streptomycin, whereas on the acid side of neutrality (e.g., *p*H 6.0) its activity is much diminished.

Effect of Bacterial Numbers

That the size of the inoculum affects the concentration of streptomycin required to inhibit growth has been shown by May, Voureka, and Fleming (1947), Berkman, Henry, and Housewright (1947), and Lenert and Hobby (1947). The dependence of bactericidal action on the same factor was observed by Strauss (1947). It was clearly of interest to determine the effect of inoculum size on bactericidal action under the conditions of the present experiments. Broth culture of *Staph. aureus* was spun down and resuspended in one-tenth of its original volume, this suspension and three decimal dilutions of it being added to fresh broth containing 200 μg. of streptomycin per ml.

These mixtures were maintained at 37° C., viable counts being made as usual (Fig. 6). The mixture with an initial count of the order of tens of millions was sterilized in two hours, as had repeatedly been observed before. Those containing tenfold lower bacterial concentrations were sterilized in 30 minutes; that containing the highest bacterial concentration was not sterilized at all, the count falling by over 99% in 30 minutes and then remaining stationary for the remainder of the experimental period (eight hours). This experiment was repeated several times with different concentrations of both streptomycin and bacteria, always with the same type of result. The absolute concentration of streptomycin is not the determining factor; it is the relation between that concentration and the numbers of bacteria. It appears that a given concentration of streptomycin can kill only a population of a certain density; if more are present some will survive.

Several possible explanations of this unusual finding have been explored with negative results. Subcultures from surviving bacteria were retested by the same technique and found not to display any markedly increased resistance.

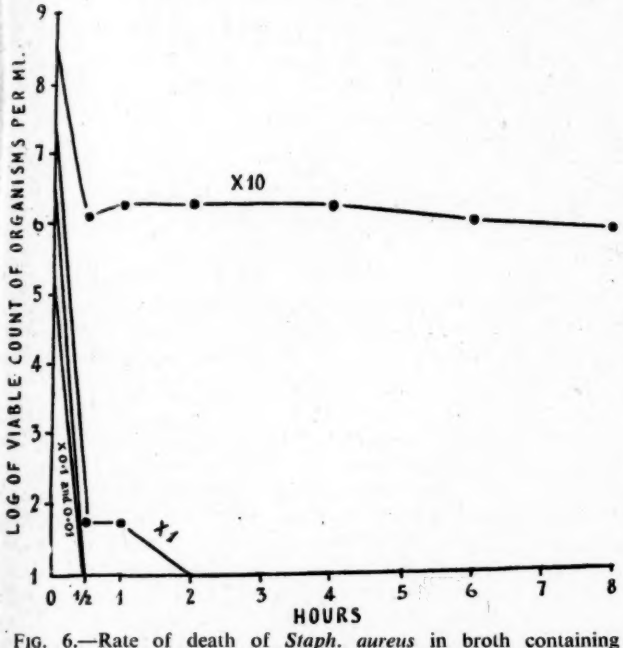

FIG. 6.—Rate of death of *Staph. aureus* in broth containing 200 μg. of streptomycin per ml. at 37° C.: inoculum of four different sizes—×10, 1, 0.1, and 0.01 of broth culture.

The streptomycin is not inactivated by an excess of bacteria; when these are removed and fresh culture of either *Staph. aureus* or *Bact. friedländeri* is added its bactericidal activity is undiminished. The presence of additional dead bacteria does not prevent the killing of living ones, provided the numbers of the living are within the capacity of the streptomycin concentration used.

Despite the apparently normal streptomycin sensitivity of cultures derived from survivors in such experiments the suspicion remains that a greater resistance possessed by a small proportion of cells in a culture must account for survival. It appears that no culture is homogeneous from this standpoint: Klein and Kimmelman (1946) have shown in the case of dysentery bacilli, and Alexander and Leidy (1947) in that of *H. influenzae*, that an enormous inoculum will yield growth in a medium containing 1,000 μg. of streptomycin per ml., indicating that one cell in some billions is resistant even to this concentration. The Oxford strain of *Staph. aureus* behaves similarly; a heavy inoculum (about 500,000,000 living cells) produced hundreds of colonies on agar containing 10 or 20 μg. of streptomycin per ml., and 16, 2, and 1 colonies respectively on agar containing 50, 100, and 200 μg. per ml. It seems likely that this is only another aspect of the same phenomenon as survival in tests of bactericidal action, although the present experiments have not proved this. Further observations are desirable both on the effects of the ratio weight of streptomycin/bacterial numbers on bactericidal action and on the properties of cells surviving under such conditions.

Clinical Applications

It is generally assumed that parenteral streptomycin treatment has only a bacteriostatic effect, but the concentration attained in the blood for a time after a single dose may exceed 30 μg. per ml., and this may well be bactericidal. Lower concentrations than this, according to Smith and Waksman (1947), will kill *Myco. tuberculosis* in vitro. The present tendency in the U.S.A. is to administer the drug only twice daily for the treatment of tuberculosis—a proceeding which does not maintain a constantly bacteriostatic concentration in the blood. Feldman (1946), treating tuberculosis in guinea-pigs, found that doses given once, twice, or four times daily, or four times daily only during alternate weeks, had an "essentially equal efficacy." These otherwise anomalous findings could be explained by assuming that each dose actually kills many of the more susceptible bacilli which are accessible and actively multiplying at the time of its administration.

The fact that higher concentrations are more rapidly bactericidal has an important bearing on local treatment. Of this there are various forms, including intrathecal injection in meningitis, application to infected surfaces, and the treatment of urinary-tract infections. Streptomycin, like penicillin, is excreted in the urine, where it attains a high concentration. If its effect *in vivo* parallels that here described *in vitro*, susceptible bacteria should disappear rapidly from the urine soon after excretion has begun. In fact they do. In a number of patients receiving 0.5 g. (500,000 units) of streptomycin four-hourly for the treatment of long-established and otherwise resistant urinary-tract infections due to *Bact. aerogenes*, *Bact. coli*, or *Ps. pyocyanea* a series of specimens has been obtained at short intervals during the early stage of treatment and cultivated quantitatively. A viable count which is usually several hundred millions per ml. before treatment falls to a few thousands two hours after the first dose—i.e., even before excretion has become maximal. After six, eight, or twelve hours, if treatment is going to succeed, the urine is completely sterile. If treatment is to fail, specimens continue to yield counts of a few hundreds or thousands per ml. until the second day, when there is a sharp rise and the organism is found to be already much more resistant. It seems as if the issue is settled one way or the other within 24 hours or less. It also appears that an exceedingly brief period of treatment may suffice: in our experience apparently permanent cures of long-standing infections have been achieved by giving only six, four, or even three 0.5-gm. doses. Whether so small a total dose is always advisable only further experience can show. If so, the economy secured is an obvious advantage

Conclusions

1. Streptomycin is bactericidal. The rapidity and extent of its bactericidal action depend on: (*a*) concentration—high concentrations having an exceedingly rapid effect; (*b*) temperature; (*c*) medium, the effect being exerted in all nutrient media, including certain body fluids, but only to a slight extent in non-nutrient media; (*d*) the size of the inoculum, a small population being destroyed rapidly, whereas a proportion of a large one survives.

2. It seems possible that the therapeutic effects of streptomycin are due to bactericidal rather than to bacteriostatic action. This is certainly so when high concentrations are attained locally, as in the treatment of infections of the urinary tract.

The streptomycin used in this work (streptomycin hydrochloride Merck) was supplied for studies in this hospital by the Streptomycin (Non-tuberculous Conditions) Clinical Trials Committee of the Medical Research Council, to whom I express my thanks. I am indebted for valuable technical assistance to Miss P. M. Waterworth.

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CALCIFEROL IN THE TREATMENT OF CUTANEOUS TUBERCULOSIS

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The value of calciferol in the treatment of lupus vulgaris is now generally known. Its mode of action is still a matter for speculation, and is likely to remain so until more serial observations upon cases undergoing this treatment have been made. This report describes a series of such cases treated at Charing Cross Hospital.

The advantage of calciferol over previous methods, with the results of which it seems to compare most favourably, is almost as much a social and economic as a medical one. That a large number of man-hours are saved by patients taking a drug by mouth rather than attending a department for heliotherapy, etc., for many hours a week is obvious. In the present need for maximum effort and full employment this is a factor of considerable importance, and does not seem to have been sufficiently stressed.

This method of treatment seems to have started on both sides of the Channel at about the same time, and similar results were reached quite independently, which seems to us to add great value to these conclusions. Charpy (1943), in France, Fanielle, in Belgium, and Dowling and Prosser Thomas (1946), in London, appear to share the honours of being the pioneers in this treatment.

For the sake of brevity the cases are reported in tabular form, and those of special interest are referred to separately

Details of Cases

Case No.	Sex	Age	Duration of Lesion	Class of Lesion	Site of Lesion	Treatment	Result
1	F	5	3 mths.	A	Malar	1	a
2	F	43	25 years	A	"	1	c
3	M	34	30 "	B	L. hip	1, 2	a
4	F	31	6 "	A	Malar	1	a
5	F	62	20 "	A	Face	1, 2	b
6	F	46	28 "	A	Malar	1	a
7	M	26	1½ "	A	Neck	1	a
8	F	56	3 "	A	Both legs	1, 2	b
9	F	68	20 "	C	Face	1	c
10	F	71	50 "	B	Face, neck	1	a
11	F	59	25 "	Scrofulodermia	Neck	1	b
12	F	20	4 "	Miliaris faciei	Face	1, 2 U.V.L.	d

Key to Table

Class of Lesion (the Typical Nodules were of course Present in All Cases)

A. Lesions less than 4 in. (10 cm.) in diameter. No deformity produced by scarring.

B. Lesion greater than 4 in. in diameter; scarring may be extensive but no disabling deformities present.

C. A severe lesion producing extensive scarring and disabling deformities—e.g., ectropion or destruction of nasal cartilages.

Treatment Groups

1. Calciferol 50,000 units with added calcium thrice daily (" high potency ostelin " tablets).

2. Calciferol, either in pure alcoholic solution or in oily solution (" sterogyl "), 600,000 units per ml. twice weekly.

Result Groups

(a) Lesion clinically healed.

(b) Lesion very much improved, but one or two possible foci of activity still remaining.

(c) Progress of lesion arrested; " minimal favourable response."

(d) No apparent response; lesion continuing to progress.

Discussion of Results

The twelve cases reported (see Table) have been under treatment for nine months or longer. Six were cured, three were very much improved, two have shown very little improvement, while one has shown no response to treatment.

These figures may be compared with the results obtained by Dowling and Prosser Thomas (1946) up to December, 1945—18 cured, 9 much improved, and 5 somewhat improved—also with those of Kuske (1946) at Berne—50% excellent, 20% arrest of lesion, and in the remainder a " minimal favourable response." (The assumption that this last group corresponds to result group " c " in our table of results is our own.) Two other series which give figures for results are those of Dowling, Macrae, and Jones (1946) with 20 cases and 14 (70%) recoveries, and of Dr. Emrys Jones, of Cardiff, who had 18 cases with 16 " cleared " (89%).

Thus in some 82 cases we find 54 (66%) which have healed under the influence of calciferol, and it is probable that with further treatment this figure will be higher still. It must, however, be remembered that the Finsen Institute in Denmark claimed 735 cures out of 975 cases (75%) between 1914 and 1923 using methods other than the administration of large doses of calciferol.

It is probably safe to assume that about 60% of cases of lupus vulgaris in this country at this time may be cured by calciferol therapy alone (the reason for qualifying this statement is discussed on p. 388). It is of interest to note that streptomycin has been tried out in America on cases with lupus vulgaris, but the results have so far not been as successful as with calciferol.

Two Cases of Special Interest

Case 10.—This patient complained of flatulence, sickness, and diarrhoea after taking one " ostelin " tablet thrice daily for 14 days. She was told to continue with the tablets unless the symptoms got worse, when she was to stop taking them and report to

us. She returned two weeks later, having stopped the tablets for a week. She complained of some frequency of micturition. Her urine was found to be normal but perhaps increased in amount. A plain radiograph of the abdomen revealed fusion of L3 and L4, with calcified mesenteric glands probably of tuberculous origin; also possibly, in view of the history, a large amount of calcium in the colon. The patient continued without calciferol and was examined two weeks later. Her symptoms were then quite relieved. A plain radiograph appeared the same as before. Barium was given by mouth, and later the patient was examined under the *x*-ray screen, when it was obvious that the calcium deposits were not in the caecum or colon but only in the mesenteric glands. More intensive questioning revealed that there was some suggestion of a tuberculous kidney 30 to 40 years ago because of backache then, but it had not been very thoroughly investigated and there was nothing else that the patient could recall.

This case is reported in detail because we have already been warned of the possibility of "flaring up a lesion" with calciferol (Dowling and Prosser Thomas, 1946; Dowling, Macrae, and Jones, 1946). In this case there may have been a quiescent tuberculosis of the mesenteric glands, which seem so well calcified now but which the calciferol may have temporarily stimulated. It is therefore important before starting treatment to consider the possibility of an exacerbation not only of the skin lesion but of a lesion elsewhere.

Case 12.—This was a resistant case of lupus miliaris faciei. (Another case of lupus miliaris faciei has been treated by us with calciferol, but was not under observation long enough to qualify for the table of case results.) The patient presented with symmetrical aggregations of lupus nodules on forehead, cheeks, chin, and neck. There was no family history of tuberculous diseases, and thorough investigation revealed no evidence of tuberculosis elsewhere. One "ostelin" tablet thrice daily (150,000 units of calciferol daily) resulted only in intense thirst and troublesome borborygmi: no effect was observed on the lupus lesions. After two weeks' rest the course was restarted, but again symptoms of intolerance caused us to stop it.

We then tried the effect of calciferol locally. An ointment was made up with "radiostol" in a base of paraff. molle to give a concentration of approximately 70 units of calciferol per gramme. This was applied to the lesions and rubbed well in twice daily. Within three weeks there was a most dramatic improvement in the lesions: the erythema faded and the papular eruption almost faded. A stronger ointment was therefore tried, using pure calciferol in alcoholic solution in the same base at a concentration of 150,000 units per gramme. After two weeks' use of this ointment the condition had relapsed to its original state. This may well have been a flare-up caused by the very high local concentration of calciferol, or the alcohol solution may not have been absorbed through the skin. A return to the "radiostol" ointment now had no effect, nor did the oral administration of pure calciferol in doses of 300,000 units twice weekly.

An ointment corresponding to the stronger of the above was then made up, substituting A.T.10 (dehydrotachysterol) for the calciferol (0.375 mg. per g.); the patient applied this to the left half of her face and the calciferol ointment to the right half for four weeks. Neither appeared to affect the lesions. She has completed a course of ultra-violet irradiation, but her face remained in much the same state when last seen.

Methods of Administration

Ostelin High-potency Tablets.—Each tablet contains 50,000 units of calciferol with added calcium. The usual dose is three tablets a day for 14 days when the patient starts treatment. The blood chemistry is investigated beforehand (see below). When the patient is seen in 14 days the blood chemistry is again investigated and the dose is maintained if there are no untoward symptoms. After a further 14 days the patient is seen again and, if no toxic symptoms have developed, carries on with the same dose for a month. A further specimen of the blood is then taken, and if all is well the patient comes up once a month for observation. If toxic symptoms develop either the calciferol is withheld or the dose is reduced for a week or two. After about four months the patient is usually given a rest from calciferol for two to eight weeks. This method is based on the original method used by Dowling and Prosser Thomas (1946) in 1943.

Pure Calciferol in Alcoholic Solution (5 mg. per ml.: 1 mg. corresponds to 40,000 units of activity).—We diluted this to an emulsion with 1 fl. oz. (28 ml.) of water, and the patient took it in three doses during the week. This corresponds to the solution in propylene glycol used by Charpy (1943), the administration of which, combined with the giving of calcium (as calcium gluconate) or 1 to 2 litres of milk a day for one or two months, is becoming known on the Continent as the "méthode de Charpy."

Sterogyl calciferol—600,000 units in ampoules for oral or intramuscular use. We did not give any by injection to these cases.

Radiostol, employed to make up the ointment for Case 12.

Toxic Effects

At some stage of treatment most of our cases showed symptoms attributable to the large doses of calciferol. These were: salty taste in the mouth, thirst, anorexia, nausea, vomiting, flatulence, abdominal pains, diarrhoea, giddiness, lassitude, and frequency of micturition. Case 8 complained of headaches and cramps in the legs.

It was most noticeable that the symptoms occurred almost entirely when the patients were taking ostelin tablets. Furthermore, we found that two cases developed severe symptoms with ostelin tablets but were unaffected by the pure vitamin (started six weeks after the last course of ostelin) in dosages of 1,200,000 units weekly for three weeks. Cases 3 and 7 had no toxic symptoms at any time. All cases which showed symptoms apart from a salty taste in the mouth or thirst had chest and plain abdominal radiographs taken. Only in Case 10 was any abnormality found.

Case 8 was carefully investigated for hypertension or peripheral vascular failure. There was some tenderness of the calf muscles, but the circulation of the feet was always good and *x*-ray examination of the legs showed no evidence of calcified arteries. Blood pressure was normal.

Comparison of Intolerance of Calciferol and A.T.10

A.T.10 is probably the best substance to use as a control in calciferol investigations. A synthetic compound resembling tachysterol (the precursor to calciferol in the ergosterol–calciferol synthesis), it has the same effects upon the blood chemistry but does not cure rickets. We are grateful to Dr. Nathan for a gift of A.T.10 produced by Bayer (Darmstadt), which was used as our control.

A healthy man aged 24 was given a course of pure calciferol for eight days. When the blood chemistry had been normal for one week after this a similar course of A.T.10 was given, the symptoms being noted as they occurred. On neither occasion was calcium added. Intense thirst developed on the fifth day of taking calciferol and on the fourth day when taking A.T.10; anorexia developed on the seventh day with both substances, and marked borborygmi were noticed a few hours later. Also at this time there developed a definite "sensitivity," hardly amounting to pain, over the whole abdomen on palpation. This suggests that the above symptoms are not specific for calciferol in high doses but follow some effect of calciferol which is also produced by A.T.10.

Experience suggests that it is intensified by giving additional calcium. It has, however, been previously recorded that these symptoms bear no definite relation to the serum calcium (Dowling and Prosser Thomas, 1946), an observation which we can confirm.

Blood Chemistry

The reactions of the following factors in the patients' blood to dosage with calciferol were investigated: (1) the serum calcium; (2) the serum alkaline phosphatase; (3) the serum cholesterol. The serum calcium was estimated on each sample of blood before the other tests, and these were then done in the above order. (Our debt to Dr. Patterson, of the Institute of Pathology, and to his assistants for performing nearly 200 estimations is such that we feel compelled to acknowledge it in the text, where we hope it is less likely to be overlooked.) These are first done before any calciferol is given.

Serum Calcium.—Our results agree with those of others. After an initial lag of a few days up to two to three months the serum calcium rose in all cases, usually to about 11 mg. per 100 ml. (normal 9–11 mg.). At this level there were usually no symptoms except for some thirst. In some cases it rose to over 14 mg., and in one case to 15.2 mg. These higher levels were nearly always associated with symptoms of a fairly severe nature, but, apart from these cases, we did not notice any definite relation between the severity of the symptoms and the serum calcium level. However, we are of the opinion that a steady rise in the serum calcium is an indication for a reduction in the dose of calciferol if not for its complete withdrawal. All our observations have been on the total serum calcium levels. There is need for further research on the effects of the different forms in which calcium is present in the blood.

Serum Alkaline Phosphatase.—(Our results are given in King–Armstrong units, the normal values being 3 to 13 units.) Before starting treatment with calciferol the normal alkaline phosphatase in all our cases of lupus vulgaris was between 5 and 8.5 units. With the administration of calciferol there was sometimes an almost immediate fall in this figure, which then continued more slowly while the dose was maintained. In some cases it rose again while the patient was still on calciferol. When the reading became less than 4.5 there were nearly always some signs of intolerance. These symptoms, however, did not always disappear when the alkaline phosphatase rose again. Although inconclusive, it is interesting to note that at times there seemed to be some relation between the intensity of the fibrous reaction to the lesion and the relative value of the alkaline phosphatase. Although within normal limits it appeared that the better the fibrous reaction and the more scar tissue in the lesion the lower was the original reading. Thus in a case with few nodules of activity and a firm scar a reading of 4.8 units was found. A case showing more activity gave the figure of 8.2 units. As this finding seemed fairly constant it was suggested that a lesion showing chronic inflammation with a minimum of scarring would give a high figure: some weeks later the case with a lymphocytoma was seen, and the reading here was 14.7 (later readings have been 10 units and over). Finally, it was noticed that the serum alkaline phosphatase reacted on the whole much more rapidly to the administration of calciferol than the serum calcium. Experiments with a control subject showed a fall in the alkaline phosphatase to have started within one hour of taking 100,000 units of calciferol by mouth.

Serum Cholesterol.—It has been stated (Eichelberger and McCluskey, 1927) that in a case of tuberculous infection in which the resistance is good the serum cholesterol is nearly always raised above normal, and that if it returns to normal under treatment the prognosis is favourable. Conversely, in severe infections where the resistance is not so good the cholesterol level is low and the prognosis poor. The method used by Dr. Patterson for estimating serum cholesterol gives a reading in normal individuals of 140 to 240 mg. per 100 ml. Cases of lupus vulgaris all showed a relatively good resistance, and our initial figures were all greater than the normal. Two cases were over 300 mg. With calciferol the figures tended to rise at first, in some cases to 360 mg. or more. But with continuing treatment they began to fall towards normal. All these cases showed recovery or marked improvement. It was as a check on these figures that a case of bronchopneumonic phthisis was investigated. Before treatment (the patient came from the casualty ward and was severely ill) his serum cholesterol was only 92 mg. per 100 ml. After three months' rest and intensive treatment with calciferol by mouth the figure had risen to normal (184 mg.) and he was able to go to a sanatorium. Our findings would therefore seem to confirm the above statement. There appeared to be a definite relation between the value of the serum cholesterol and the administration of calciferol in lupus vulgaris, and this relation follows the clinical course of the disease.

We should mention here the thorough investigation of the effect of calciferol on the blood sedimentation rate by Dr. Feeny (1946), at the London Hospital; he found that it is not constantly affected.

Discussion of the Effects of Calciferol

There are two ways in which calciferol may exert its effect.

1. *By Direct Inhibition of the Tubercle Bacillus.*—The only apparently serious suggestion that this may be the mechanism is contained in an unsupported statement by Bicknell (1946). So significant a finding would no doubt have been supported by the fullest evidence if this had been available. Nevertheless it is important that the effect should be investigated. We are grateful to Dr. Walker for permission to quote an experiment undertaken by him at the Glaxo Laboratories in which cultures of *Mycobacterium tuberculosis* were grown on media containing increasing concentrations of calciferol. There was no inhibition of the growth in concentrations approaching those *in vivo*. To investigate the possible effect upon the resistant "envelope" of the organisms cultures of fresh pathogenic tubercle bacilli were incubated for 24 hours with fresh human serum, and calciferol in various concentrations, in the Bacteriological Laboratory of Charing Cross Hospital. The "envelopes" were morphologically unaltered, and the organisms retained their vitality and pathogenicity up to a concentration of 500 units of calciferol per ml., where the serial concentrations were discontinued. It would appear, therefore, that calciferol has no specific effect on *M. tuberculosis*.

2. *By Increasing the Body Resistance.*—It is more probable that this is the effect of calciferol. In favourable cases the rate of tissue repair exceeds that of tissue destruction. The relatively raised alkaline phosphatase sometimes seen at the start of treatment may be an expression of a relative tissue lack of calciferol to meet the demands of local inflammation and repair. When repair and fibrosis become pathologically overactive we find a tendency to depression of the serum alkaline phosphatase. This was found in cases of sclerodermia (Medvei, 1945) provided there was no element of hyperparathyroidism (Wigley and Hunter, 1945).

Earlier in this article the average recovery figures were qualified by the statement "in this country at this time." This refers to the variation of calciferol in the average diet of the population at different times—a factor already noted by Jaeger (1946) at Lausanne.

Effects of Calciferol on Some Other Diseases

1. Other Tuberculous Diseases.—(*a*) *Cerebral Tuberculomata* (2 cases):—No apparent effect. (*b*) *Tuberculous Meningitis* (2 cases, both fatal):—During the terminal stages the effect of giving calciferol intrathecally was investigated—in one case it was apparently well tolerated, but in the other it caused a reaction. (*c*) *Bronchopneumonic Phthisis* (1 case, quoted above):—Clinical and radiological improvement in three months.

2. Skin Diseases.—(*a*) *Pemphigus Vulgaris*:—A case of some years' duration in a woman of 53. At start of treatment with ostelin tablets there were several blisters, ulceration of the throat, cough and dysphagia. After 14 days she felt better and the blisters were fewer, so the tablets were increased from two to three a day. This was continued for two months, during

which time the blisters varied in size and number, although the patient felt well all the time. Then thirst developed and a rest of two weeks was given, during which time the blisters got worse. Calciferol was resumed, one tablet twice daily for three months with a month's rest between courses. Her present condition is good, with few blisters, and she feels much better. (*b*) *Lymphocytoma* :—This occurred in a woman aged 55. Biopsy showed dense aggregations of lymphocytes with very little fibrosis; there was a history of its having been present for one year. The Wassermann reaction was negative. This lesion improved under *x*-ray treatment, but when a fresh lesion appeared calciferol was tried—ostelin one tablet twice daily. With *x*-ray treatment the previous lesion was considered healed after six courses over two years. The fresh lesion was healed clinically with calciferol in four months. A further biopsy now showed a reversal of the histological picture, with dense fibrosis, dilated capillaries, and small discrete foci of lymphocytes. "Apparently a remnant of a pre-existing lymphocytoma" (Dr. Muende. St. John's Hospital, Leicester Square). (*c*) *Granuloma Annulare* :—One case, that of a woman aged 33. Calciferol had no effect on this lesion in any dosage orally or by local inunction.

3. A case of *multiple myelomatosis* improved while on calciferol.

Summary

Twelve cases of cutaneous tuberculosis are presented and the results discussed. Four methods of administration are outlined and some toxic symptoms described.

The effects of calciferol on blood chemistry were found to be as follows :—(*a*) a rise in the serum calcium usually occurs after prolonged administration : (*b*) an almost constant fall in the serum alkaline phosphatase generally occurs soon after the calciferol is given; and (*c*) the usually slightly raised serum cholesterol tends to increase before returning to normal.

The effect of calciferol appears to be that of increasing the body's resistance, and it does not seem to have any direct toxic effect on the tubercle bacillus.

Brief notes are given on some other diseases treated with calciferol.

We wish to thank members of the honorary medical staff, especially Dr. H. A. Dunlop, for valuable suggestions and advice and for permission to investigate the effect of calciferol on some of their patients; and Mr. Whittet, late chief pharmacist at Charing Cross Hospital, now at University College Hospital, for preparing the calciferol in various ways. We are also greatly indebted to Dr. Walker, of Glaxo Laboratories, for supplies of pure crystalline calciferol in nitrogen-sealed ampoules for these investigations and for undertaking the assay of the (oily) solution of A.T.10.

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Preventive Medicine and Public Health, by Prof. Wilson G. Smillie (New York, the Macmillan Company, 30s.), is an interesting book intended for the medical student who expects to practise medicine in the community. The greater part of most textbooks of public health are on environmental hygiene and the communicable diseases. Nearly half this is on child hygiene, adult health protection and promotion, and public-health administration, much of this last section being devoted to health education, medical social work, and allied subjects. The part on adult health protection will break new ground to many readers; it includes sections on geriatrics, the preventive aspects of peptic ulcer, appendicitis, heart disease, obesity, diabetes, arthritis, allergy, and alcoholism. Treatment as well as prevention is discussed in some of these sections. British readers will find much food for thought in all parts of the book—for instance, the table showing positive Wassermann reactions found in a variety of economic and social groups giving rates per thousand varying from 1 in university students, 8 in prospective blood donors, and 12 in premarital tests, up to 110 in street beggars, 240 in convicts, and 300–700 in prostitutes; the psychological implications are obvious. The diagrams are most instructive.

RETROPERITONEAL HAEMORRHAGE IN PREGNANCY

BY

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The following case may be of interest because of the great rarity of retroperitoneal haemorrhage complicating pregnancy (six cases have previously been reported), and because of its association with a condition of eclampsia and a concealed accidental haemorrhage.

Case History

The patient was a 2-gravida, aged 25, whose general health was good. She had had scarlet fever at the age of 16. In September, 1945, she had a normal pregnancy—labour of 36 hours' duration terminating in the spontaneous breech delivery of a male child weighing 8 lb. (3.6 kg.) which died from cerebral haemorrhage after half an hour.

Her menstrual history showed menarche at 14; periods regular, 28-day cycle; normal loss; no dysmenorrhoea; no intermenstrual discharge. Her last menstrual period began on Aug. 11, 1946, and the expected date of confinement was May 18, 1947. The patient had made regular attendances at her antenatal clinic. Her last visit was on April 3, when the uterus was found to be of the size of 34 weeks. The position was vertex R.O.A., the head not engaged; the foetal heart was heard. She was admitted as an emergency case at 3.30 p.m. on April 10.

At 3 p.m. that day she had felt weak and sick and had suddenly collapsed with sharp pain in the hypogastrium. She was reported to have had one fit at home and two fits while in the ambulance en route to the hospital. Pain was severe and constant. There was no history of a "show," and she had not had any frequency of micturition or dysuria. The rectum had been evacuated in the morning.

On examination she was pale and restless. The pulse varied between 110 and 120, and was of very poor volume. The blood pressure was 70/45. Nothing abnormal was detected in the heart, and the lungs were clear. The uterus was of 36 weeks' size; the position of the foetus was difficult to detect, but was thought to be vertex R.O.A. The foetal heart could not be heard. The uterus was tense, tender, and ligneous. There was no loss per vaginam. A catheter specimen of urine revealed albumin (Esbach's reaction, 10 parts per 1,000). The haemoglobin was 50%. A provisional diagnosis of concealed accidental haemorrhage and antepartum eclampsia was made.

In view of the condition of the uterus and the state of profound shock a conservative attitude was adopted and anti-shock therapy was immediately instituted. Morphine, 1/4 gr. (16 mg.), was given immediately and again four hours later. A blood transfusion of group O cross-matched blood was begun, and the patient was put on to a half-hourly pulse chart, four-hourly blood-pressure chart and fluid-balance chart, and a half-hourly respiration chart. Over a period of three hours 1½ pints (850 ml.) of blood was given and the drip was continued as a slow intravenous 10% glucose infusion in order to improve the urinary output. Potassium citrate, 15 gr. (1 g.), and phenobarbitone, 1/2 gr. (32 mg.), were given every four hours.

At 6.30 p.m., three hours after admission, the blood pressure had risen to 98/60, the pulse was 90 and regular, and the patient felt better in herself, although she still had some pain over the lower pole of the uterus. By 10.15 p.m. she was feeling much better; her blood pressure had risen to 118/60, and her uterus was softer and less tender. The foetal presentation and position could be made out distinctly as vertex R.O.A. with the head unengaged. The foetal heart was not heard.

At 10 a.m. the next day (April 11) the blood pressure was 118/70 and the pulse rate 80, and the patient was quite comfortable. The urinary output for the previous 16 hours was 10 oz. (284 ml.) and the Esbach reaction had come down to 5 parts per 1,000. Four hours later the patient complained of a recurrence of the severe abdominal pain. She was again shocked, her pulse having risen to 124 and her blood pressure

having dropped to 90/60. The fundus of the uterus had risen 2 in. (5 cm.), and the uterus had again become tense and tender. It was obvious that the patient was bleeding again into the retroplacental space. The intravenous glucose drip was changed over to cross-matched group O blood, and atropine, 1/100 gr. (0.65 mg.), was given intravenously. In view of the gravity of the situation a classical caesarean section was performed for the sake of speed, and a stillborn macerated male foetus was delivered at 2.30 p.m.

A large retroplacental haematoma was found at operation, and petechial haemorrhages were apparent deep to the peritoneal covering of the uterus. Following the injection of 5 mg. of ergometrine and 5 units of "pitocin" direct into the uterine musculature, and the application of a hot saline pack, the uterus retracted well enough to obviate the necessity for performing a hysterectomy. The patient's post-operative condition was reasonably good, her pulse being 120 and her blood pressure 100/60. "Omnopon," 1/3 gr. (22 mg.), was given post-operatively. At 6 p.m.—three and a half hours after operation—the patient was comfortable and her pulse rate was 100. The following day the pulse remained in the region of 100, the abdominal distension was slight, and 25 oz. (710 ml.) of urine was passed spontaneously after an injection of 1 ml. of carbachol. Esbach's reaction was 1 part per 1.000.

On the second post-operative day (April 13) the blood pressure remained in the region of 124/80, pulse 100, temperature 99° F. (37.2° C.). The patient was comfortable and her urinary output was 30 oz. (850 ml.). No albumin was present in the urine. Next day the blood pressure was 120/70 and the pulse round about 84. Fluid output was satisfactory and there was no albumin in the urine.

At 6 a.m. on the 15th the patient was reported to have had a fit, and on examination a few minutes later she was found to be in a state of extreme collapse, with a pulse rate in the region of 150 and almost imperceptible, blood pressure 60/?, and air hunger. It was obvious that a severe internal haemorrhage had occurred. Blood transfusion was immediately begun and 2 ml. of nikethamide given in an effort to combat the profound shock present. Moderate heat was applied in the form of a heat-cradle, the foot of the bed was raised, and 1/6 gr. (11 mg.) of omnopon was given. There was no response, and two hours later the patient died.

Post-mortem Examination

The relevant post-mortem findings were as follows: *Abdomen:* The incision was clean and uniting well. The general peritoneal cavity contained about 4 pints (2.25 litres) of blood. *Uterus:* The fundus was 4½ in. (11.25 cm.) above the symphysis pubis. No adhesions were present. A classical caesarean scar was clean and uniting well. Bisection of the uterus following removal revealed a normal placental site. The uterine wall appeared pale but otherwise normal. *Intestines:* N.A.D. *Liver*: Enlarged; no obvious necrosis; areas of petechial haemorrhage beneath the peritoneum. *Spleen:* Three times normal size, lobulated, on section appeared normal. *Kidneys:* Slightly enlarged, pale, capsule stripped easily. *Stomach:* Mucosa normal. Linear retroperitoneal haemorrhage extending along the greater and lesser curvatures of the stomach.

Pancreas.—The whole region within the curvature of the first, second, and third parts of the duodenum was occupied by a large retroperitoneal haemorrhage which completely obliterated the normal situation of the pancreas. On section of this area the pancreatic tissue was seen to be broken up into scattered islets surrounded by a mass of blood clot. The peritoneum covering the floor of the lesser sac was ruptured over the superior surface of the body of the pancreas; it appeared that the haemorrhage had started near the junction of the body and neck of the pancreas, and had ruptured into the lesser sac of peritoneum and so through the aditus of the lesser sac into the general peritoneal cavity, resulting in the massive intra-peritoneal haemorrhage that had caused death.

Microscopical Examination.—Kidney: Glomeruli showed increased cellularity, thickening of the basement membrane, and cloudy swelling of the convoluted tubules. *Liver:* Patchy necrosis of the periphery of the lobules. *Spleen:* Some increase of the inflammatory cells. *Suprarenals:* N.A.D.

Discussion

Kenny and Doniach (1945) reported the first case of retroperitoneal haemorrhage associated with a condition of pre-eclampsia. The patient was at full term and had severe pain and shock following intercourse. At operation a retroperitoneal haemorrhage was found extending from the pelvic brim to the diaphragm. The patient died; the source of the bleeding was not found at necropsy.

Potocki (1918) was the first to describe a retroperitoneal haemorrhage associated with pregnancy. His patient was only 10 weeks pregnant, and was operated upon for a suspected ruptured ectopic gestation. At laparotomy an extensive retroperitoneal haemorrhage was found in the region of the transverse mesocolon, pancreas, stomach, and the left kidney. The patient died, the cause of death being considered to be due to a ruptured miliary aneurysm of the left renal artery.

Low (1944) reported a fatal case of retroperitoneal haemorrhage occurring two weeks from term. At necropsy a massive retroperitoneal haemorrhage was found extending from the left brim of the pelvis, behind the sigmoid colon, descending colon, and splenic flexure; it was most marked in the region of the left kidney and spleen. The patient died seven hours after a classical caesarean section. Wilson (cited by Low, 1944; Kenny and Doniach, 1945; O'Connor and Bradley, 1946) described a case of post-partum retroperitoneal haemorrhage in which the patient died on the operating table. At necropsy a ruptured aneurysm of the left renal artery was found.

Halban and Seitz (1928) considered that retroperitoneal haemorrhage was nearly always perirenal in origin, and that the condition may be secondary to renal phthisis or neoplasm or may arise spontaneously in haemophilia and nephritis.

Danforth (1945) reported a case of ruptured aneurysm of the splenic artery. The patient was a 3-gravida, aged 28, who collapsed with severe upper abdominal pain at the 28th week. She showed signs of severe internal haemorrhage, and a vaginal hysterotomy was performed because the condition was considered to be due to premature detachment of the placenta. The patient died, and necropsy revealed an aneurysmal sac of the splenic artery and rupture into the lesser sac of peritoneum. No mention was made of the urinary findings or of the blood pressure before the accident.

The most recently reported case of retroperitoneal haemorrhage arising during the course of pregnancy, and incidentally the only recorded case of recovery, was that of O'Connor and Bradley (1946). Their patient was a 2-gravida, aged 38, at full term. Pregnancy had been uneventful apart from a mild hyperpiesia, and she was admitted to hospital because of moderate pain in the left side of the abdomen. On pelvic examination a tender firm mass was found filling the posterior half of the pelvis, and a provisional diagnosis of a fibroid of the lower segment of the uterus that was likely to cause dystocia was made. A lower-segment caesarean section was performed, and after delivery of the infant the pelvic mass detected before operation was found to be a large firm retroperitoneal haemorrhage filling the whole of the true pelvis and extending into the mesentery of the sigmoid colon. The patient made an uninterrupted recovery, with gradual resolution of the pelvic haematoma. The haemorrhage was thought to have originated from a ruptured haemorrhoidal vein.

It is notable that in five out of the six previously reported cases the haemorrhage started in the region of the floor of the lesser sac of peritoneum, and in these five cases there was profound shock and the patients died. In the sixth case

the haemorrhage had a pelvic origin, the shock was less profound, and the patient recovered.

My case naturally falls into the same category as the first five cases. The site of the haemorrhage is of interest because the tear in the peritoneum of the floor of the lesser sac lay directly over the course of the splenic artery, just distal to the bifurcation of the coeliac artery. The actual origin of the haemorrhage could not be determined because of the friability of the various tissues of the area, but, judging from the speed with which the patient bled to death, the vessel concerned must certainly have been of fairly large calibre, and the pressure behind the blood must have been sufficient to rupture the peritoneal floor of the lesser sac. This catastrophe's occurrence in close proximity to the coeliac plexus no doubt further aggravated the shock. The retroperitoneal haemorrhage which caused the death of the patient occurred on the fourth day after caesarean section for accidental haemorrhage, and it would be of interest to correlate, if possible, the condition of retroperitoneal haemorrhage with toxaemia of pregnancy. One of the outstanding features of the pathology of eclampsia is capillary thrombosis followed by extravasation of red blood cells, and I wonder whether or not a similar occurrence might happen in vessels of larger calibre in isolated instances. Certainly in two of the previously reported cases a condition of toxaemia of pregnancy was present.

Summary

A case of eclampsia complicated by an accidental haemorrhage is described.

Conservative management of the haemorrhage had to be abandoned in favour of classical caesarean section owing to the fact that the uterus remained obstinately tense, and a sudden increase in the retroplacental haemorrhage made immediate operative intervention imperative.

The patient made a smooth recovery until the fourth postoperative day, when she developed a massive retroperitoneal haemorrhage which seemed to originate in the region of the junction of the body and neck of the pancreas. The haemorrhage burst through the peritoneum of the lesser sac, and from 4 to 5 pints (2.27 to 2.84 litres) of blood passed through the aditus of the lesser sac into the general peritoneal cavity, causing death from internal haemorrhage.

A review of the literature to date is given, and an attempt is made to correlate a possible connexion between the toxaemias of pregnancy and retroperitoneal haemorrhage occurring during pregnancy.

My thanks are due to Dr. J. Seed, Medical Superintendent, Driffield County Hospital, East Yorks, for permission to publish the case, and to Dr. Barnard, County Pathologist to the East Riding of Yorkshire, who carried out the pathological investigations.

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The Foreign Office announces the publication and distribution of the first volumes of the *Fiat Review of German Science*, compiled by German experts under the direction of the British, American, and French Field Intelligence Agencies (Technical). The review is written in German and covers fundamental research in pure science during the years 1939–46. The first printing is a restricted edition for official distribution between the three Allies and Unesco. The British share of about 250 sets will be issued to Governmental and other bodies within the Commonwealth, to universities and medical schools, and to the libraries of certain learned and professional societies. It is hoped that the edition will be completed within the next six months.

CLINICAL VALUE OF SOME METHODS OF ESTIMATING ERYTHROCYTE SEDIMENTATION RATE

BY

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Many papers have been published on the rate of sedimentation of red corpuscles since Westergren (1921) recorded his original observations on the significance of an increased rate of fall in tuberculous male patients. Several techniques have been devised, including the use of heparin (Rourke and Ernstene, 1930) and oxalate (Wintrobe and Landsberg, 1935) as anticoagulants. Variations in the bore and length of the measuring tube have been advised (Cutler, 1926 ; Wintrobe, 1936), and a micromethod is used in some sanatoria (King Edward VII Sanatorium Annual Report, 1933–4). Investigation has been made into the physical and chemical factors involved, and varying importance ascribed to the size of the tube used (Ham and Curtis, 1938), to variations in temperature during recordings (Weingarten, 1945), to the presence of anaemia (Wintrobe, 1936), and to deficiency of plasma fibrinogen (Ham and Curtis, 1938). Various factors may be allowed for in " correction charts," of which the most popular allow for degrees of anaemia evidenced by variations in the volume of packed red corpuscles (Wintrobe, 1936 ; Whitby and Hynes, 1938).

The sedimentation rate is now generally accepted as a useful index of activity in tuberculosis and rheumatism, but it was felt that a comparison between methods from a clinical standpoint might be interesting. This paper describes the findings of such a comparison—between the clinical course of some tuberculous patients and the trend of their sedimentation rates as estimated by the methods of Westergren (1921), Wintrobe (1936), and Whitby and Hynes (1938), the last two methods involving corrections for anaemia.

Methods of Investigation

Sedimentation rates were estimated on all patients admitted to the tuberculosis wards of the London Hospital Annexe. Four ml. of blood was aspirated from an antecubital vein—2 ml. being mixed with 0.5 ml. of 3.8% sodium citrate solution and the remaining 2 ml. placed in a test-tube in which a drop of a mixture of ammonium citrate (6%) and sodium oxalate (4%) had been dried. The citrated blood was drawn up into 200-mm. Westergren tubes and the oxalated blood placed in Wintrobe tubes of 100 mm. length. The length of clear plasma in the upper part of the tubes was read at the end of one hour, and in the case of the Wintrobe tubes the volume of packed corpuscles was read after 24 hours. The investigation was carried out at laboratory temperatures varying from about 12 to 25° C. Subsequent estimations were made at intervals ranging from two to six weeks.

At the end of a year it was possible to collect the records of 61 patients who had remained continuously under observation for periods ranging from six weeks to six months (average 3.3 months) and who had had sedimentation rates estimated by both methods on from four to ten separate occasions (average 5.6).

To the readings made using 100-mm. tubes were applied two corrections: (1) Wintrobe's correction for anaemia, and (2) Whitby and Hynes's correction, which includes a classification of the rates observed into normal and doubtfully, slightly, moderately, or severely raised.

Clinical Material.—No special selection of cases was attempted. They had all been referred for hospital observa-

tion or treatment by tuberculosis officers; and sanatorium vacancies, home conditions, and suitability for active treatment determined their length of stay. The patients were all females (and therefore more liable to physiological variation in sedimentation rates), with age ranges from 14 to 46 years, two-thirds being between 18 and 30. Tubercle bacilli were demonstrated in the sputum of 53 patients, in the gastric juice of another, and, in the remaining 7, *x*-ray changes in films taken before admission showed the presence of an active lesion. The disease was bilateral in 34 cases and unilateral in 27.

Results

The range of sedimentation rates on admission and discharge is indicated in Table I. By the Westergren technique

TABLE I.—*Distribution of Patients in Various Ranges of Sedimentation Rate*

Westergren			Wintrobe			Whitby and Hynes		
Range (mm.)	On Admission	On Discharge	Range (mm.)	On Admission	On Discharge	Range (mm.)	On Admission	On Discharge
0–5	1	5	0–5	5	4	0–9 (normal)	5	9
6–15	7	16	6–10	5	4	10–13 (doubtful inc.)	13	14
			11–20	11	17	14–20 (slight inc.)	15	13
16–45	44	31	21–30	21	18	21–29 (moderate inc.)	13	11
46	9	9	Above 30	19	18	Above 30 (severe inc.)	15	14

53 patients (87%) had rates above 15 mm., 7 ranged from 6 to 15 mm. per hour, and only 1 was healthily low. The Wintrobe correction showed 40 cases (65.5%) with abnormal rates, 16 with rates suggestive of possible activity of the disease, and 5 with low rates. The correction devised by Whitby and Hynes gave a distribution of 43 cases (70%) with raised, 13 with doubtfully raised, and 5 with normal rates.

The decision of whether after a period of treatment the disease in a tuberculous patient is increasingly active, is decreasing in activity though still active, or is to be regarded as quiescent is important from the point of view of prognosis, disposal, and commencement of graduated exercise. The sedimentation rate is often adduced as evidence towards the formulation of such opinions. Table II shows the

TABLE II.—*Condition of Patients on Discharge, Classified*

		Clinical	Westergren	Wintrobe	Whitby and Hynes
Active disease	Deterioration	17	24	17	14
	No change	8	3	9	14
	Improvement	26	13	13	10
Improvement	Doubtful activity	5	16	12	14
	Quiescent	5	4	5	3
Inactive disease		0	1	5	6

numbers of patients in categories of clinical interest, their placing being based on clinical and radiological considerations, and also the trends in serial sedimentation rates during the period of observation. The Westergren figures show trends of deterioration not found clinically or by either of the other two methods, but the total numbers of patients in the "deterioration" and "no change" categories are approximately the same in all groups. Similar totals are found in the "improvement" category, but their distribution varies, for clinical opinion may regard cases as still "active" and unfit for exercise even when the sedimentation rate has fallen.

Finally, the trend of the sedimentation rate in individual cases was noted and compared with the patient's clinical course. As this part of the investigation was particularly liable to personal error, inquiries were made of the sanatoria to which 10 patients were sent, to find out their subsequent progress. Reports kindly furnished by the medical superintendents concerned seemed to confirm the validity of our estimates of clinical progress.

Table III gives observations on individual cases, and Table IV summarizes the findings of the comprehensive comparison. It will be seen that the trends of the Westergren estimations appear to conform to the clinical course in 77% of cases, against 59% in the Whitby and Hynes and 54% in the Wintrobe series. The Westergren method is in agreement with the clinical in 15 cases where the other two rates were inconsistent or contradictory, while in five cases

TABLE III.—*Rates on Admission and Discharge*

Case No.	Clinical Trend	Westergren		Wintrobe		Whitby and Hynes		Conformity with Clinical Course
		Adm.	Dis.	Adm.	Dis.	Adm.	Dis.	
1	Deterioration	60	40	41	30	30	21	0
2	No change	36	24	26	13	14	10	We
3	Deterioration	37	52	32	41	21	30	We and Wh
4	,,	46	49	22	42	21	30	Wi and Wh
5	Improvement	45	29	16	23	10	14	=
6	,,	27	14	22	15	21	10	We
7	Deterioration	8	13	6	15	1	10	=
8	,,	28	40	15	24	10	14	=
9	Improvement	17	10	19	6	14	9	=
10	Deterioration	41	54	14	28	10	30	=
11	No change	32	33	33	34	21	21	=
12	Improvement	23	31	10	22	14	14	=
13	,,	42	20	24	12	14	10	=
14	Deterioration	31	38	22	32	14	21	=
15	Improvement	25	32	23	14	14	10	0
16	,,	45	3	36	3	30	3	=
17	No change	40	50	45	49	30	30	Wi and Wh
18	,,	20	13	32	19	21	14	=
19	Deterioration	26	32	15	12	10	10	We
20	Improvement	25	13	30	8	30	7	=
21	Deterioration	20	38	33	45	21	30	=
22	,,	73	74	43	32	30	21	We
23	Improvement	30	22	46	30	30	21	=
24	,,	33	12	25	15	14	10	=
25	,,	49	20	24	30	14	21	We
26	,,	7	4	1	4	5	4	=
27	,,	65	23	38	38	30	33	We
28	,,	15	5	5	12	10	9	We and Wh
29	No change	28	21	32	21	21	14	=
30	Improvement	30	15	21	12	14	10	=
31	No change	5	10	1	1	1	1	=
32	Improvement	30	25	15	26	14	14	0
33	,,	16	12	18	14	10	10	=
34	,,	20	29	22	15	14	10	Wh
35	,,	68	31	26	26	21	21	We
36	,,	44	26	45	22	30	14	We and Wi
37	,,	76	36	36	34	30	30	We
38	Deterioration	32	13	21	12	14	10	0
39	No change	32	48	41	32	30	21	0
40	Deterioration	70	100	24	55	14	30	=
41	Improvement	11	3	8	0	10	2	=
42	,,	55	12	44	24	30	14	=
43	Deterioration	34	45	39	43	30	30	We and Wh
44	,,	22	41	31	33	21	21	We
45	Improvement	35	5	30	17	21	14	We
46	No change	20	32	21	38	10	30	0
47	Improvement	14	10	2	11	8	8	We and Wh
48	,,	11	60	14	41	10	30	0
49	,,	47	41	26	26	21	21	=
50	No change	17	13	12	6	10	7	=
51	Improvement	18	40	6	40	8	30	=
52	,,	28	28	28	42	21	30	We
53	,,	37	20	32	24	30	14	=
54	,,	32	26	14	14	10	10	We
55	,,	50	15	38	23	30	14	=
56	Deterioration	19	52	22	22	14	14	We
57	Improvement	44	16	40	8	30	10	We
58	No change	32	23	19	26	14	14	Wi and Wh
59	Deterioration	21	12	25	26	21	21	Wi and Wh
60	Improvement	12	34	17	36	10	30	0
61	,,	32	10	4	17	10	10	We

We = Westergren. Wi = Wintrobe. Wh = Whitby and Hynes.

TABLE IV.—*Agreement between Sedimentation Trends and Clinical Course*

	Agreement with Clinical Course
Westergren	47 (77%)
Wintrobe	33 (54%)
Whitby and Hynes	36 (59%)

No agreement with the clinical course by any method in 8 cases (13%)

corrected by the Whitby and Hynes method and in four cases corrected by the Wintrobe method readings were obtained agreeing better with the clinical course than those obtained by the Westergren technique.

Discussion

It has already been noted by Whitby and Hynes (1938) that the Wintrobe correction for sedimentation rates contains certain fallacies—i.e., that above certain figures the corrected rate is higher than the volume of packed cells, and that below certain volumes of packed cells sedimentation rates cannot be abnormal. Their own correction curve, like that of Wintrobe, is derived from estimations of rates in certain abnormal cases in which the blood was subsequently manipulated to conform to normal haematocrit readings, the final figures being controlled by a group of rates observed in an equivalent number of healthy students. It appears, however, from this investigation that these corrections rob the estimation of the sedimentation rate of its value. The corrected figures in the Wintrobe series often produced a series of readings which was so variable that in nearly half the cases the figures did not appear to conform to any pattern at all. The correction devised by Whitby and Hynes so levelled out the unevenness commonly found in sedimentation readings, and the estimations included so many readings in the "doubtfully" or "slightly" raised categories, that again no pattern suggesting improvement or deterioration could be detected.

Beaumont and Maycock (1935) made a plea for the increased employment of the Westergren method as being superior to two other methods then in use, and stressed the point that useful information could be obtained only by adopting the same method in serial readings. Bailey (1941) compared the Wintrobe method with the Westergren in a series of 131 cases, and reached the conclusion that the corrected rate was of little use in classifying the patient's clinical status and was misleading in a considerable proportion of cases. Davis (1946) in a general review of the clinical use of sedimentation-rate estimations advocates the Westergren technique. My findings support the opinion that the Westergren method, as generally used, gives figures for the sedimentation rate that agree better with the course of the patient's illness, estimated by prolonged clinical observation, than do the present methods that employ corrections.

Summary

A study of the erythrocyte sedimentation rates of 61 female patients suffering from pulmonary tuberculosis is reported. A comparison was made between the clinical course of the illness on the one hand and the sedimentation rates as estimated by the methods of Westergren, Wintrobe, and Whitby and Hynes on the other. The Westergren method appeared to be the most useful both in estimating the degree of activity of the disease and in indicating the direction of its progress.

My thanks are due to Dr. R. R. Bomford, Dr. K. M. A. Perry, and Dr. H. B. May for their encouragement and advice in the preparation of this article; to the medical superintendents of Pinewood, Grove Park, and the Grosvenor Sanatoria, and of Eversfield Hospital and the Royal National Hospital, Ventnor, for their reports on cases; and to Messrs. Telfer and Sait and Miss Carey for invaluable technical assistance.

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ERYTHROCYTE SEDIMENTATION RATE

THE EFFECT OF ALCOHOL AS CONTAMINANT

BY

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Schött (1928) described the effect of alcohol on the erythrocyte sedimentation rate (E.S.R.). Very small additions of alcohol in the form of drops of different dilutions in ether usually caused an increase in the one-hour sedimentation reading, while larger additions reversed the tendency and resulted finally in very reduced values. The alcohol present in venepuncture needles which had been stored in spirit was sufficient to cause large discrepancies in the results of E.S.R. determinations.

Famulari and Colacresi (1935) studied the effect of intragastrically administered alcohol on the E.S.R. They found a great diminution in the E.S.R. following the administration, but they did not examine the effects obtained by the addition to blood *in vitro* of similar proportions of alcohol to those obtained *in vivo*.

Schött's observations seem to have escaped general notice, and the purpose of this note is to draw attention to the phenomenon and its technical implications.

The Test

Sedimentation-rate determinations were performed on blood from patients with and without the addition of various proportions of industrial methylated spirit ***B.P.***, hereinafter referred to as "spirit." The blood was heparinized, 5 to 6 ml. of blood being added to 0.05 ml. of heparin solution (50 international units). One-millilitre samples of the heparinized blood were taken into test-tubes and each was mixed with 0.25 ml. of 3.8% sodium citrate solution. To the mixtures were then added 0.01, 0.02, 0.03, and 0.04 ml. of spirit respectively, a control tube having no spirit added. It will be noted that this procedure does not exactly reproduce the conditions of practice, where the blood would be contaminated with spirit before the citration. One-hour sedimentation values of the mixtures were determined in Westergren pipettes, care being taken to obtain thorough mixing and to ensure that the pipettes were clean, vertical, and not exposed to direct sunlight or draughts. The determinations for each patient were started together, and always within three hours of taking the blood.

A progressive diminution in sedimentation, preceded in some cases by a slight increase, was observed in the presence of increasing amounts of spirit. The results in 30 cases are shown in the Table. With the exception of Cases 29 and 30 (investigated at 19° and 17° C. respectively), corrections of the E.S.R. for the temperatures of the determinations have been made from an empirical chart (*Laboratory Digest*, January, 1946). Slight haemolysis was observed with Cases 4, 5, and 10 in the mixtures containing the higher concentrations of spirit.

Whether the depressant effect of spirit can constitute a considerable source of unreliability in E.S.R. determinations depends on the possible degree of contamination of blood samples. The "residual contents" of Record-type syringes of various capacities, complete with needles, were estimated as follows, detaching the needles only during expulsion of liquids.

Aqueous dye solution (T 1824) was drawn into the syringe to capacity and expelled. After sucking in and expelling air one

to three times, water was drawn in to capacity and expelled, as dilute dye solution, into a measuring cylinder. The dilute dye, after making up to a measured volume, was compared

Table showing the Effect of Increasing Concentrations of Spirit on the E.S.R. (mm./1 hr.)

Case No.	Amount of Spirit in 1·25 ml. of Citrated Blood				
	0	0·01 ml.	0·02 ml.	0·03 ml.	0·04 ml.
1	1	2	1	1	1
2	4	3	3	2	2
3	5	6	5	3	1
4	6	8	5	2	1
5	9	6	2	2	1
6	10	13	11	5	2
7	13	9	4	2	2
8	15	13	11	6	3
9	17	18	13	9	4
10	18	14	12	7	2
11	23	19	13	6	3
12	25	20	14	5	2
13	26	28	24	21	11
14	26	19	6	3	1
15	29	21	6	4	3
16	30	25	18	12	7
17	32	24	14	6	3
18	34	30	22	12	5
19	36	32	25	7	4
20	42	35	14	6	3
21	54	42	18	7	2
22	64	59	40	24	14
23	64	52	22	5	4
24	67	69	62	44	13
25	74	75	70	57	38
26	78	77	53	29	12
27	86	86	78	53	26
28	94	91	74	47	26
29	120	112	102	85	42
30	128	126	126	86	43

colorimetrically with an appropriate dilution of the original dye. A simple calculation gave the residual contents of the syringe with needle. Three syringes of each size were examined, two determinations being made on each syringe, with the following results :

Size of Syringe	Range of Residual Volume
20 ml.	0.1 to 0.4 ml.
10 ml.	0.03 to 0.1 ml.
5 ml.	0.03 to 0.1 ml.

The amount of blood usually taken from a patient for an E.S.R. determination varies from 2 to 6 ml., and thus a specimen taken in a syringe which has been stored in spirit and used without adequate rinsing may well be contaminated with 2% of spirit. This degree of contamination will render the determination of E.S.R. liable to gross error.

I am indebted to the physicians to the Royal Infirmary, Sheffield, for permission to use material from their cases. My thanks are due to Professor Krebs for his advice and interest, and to Dr. Weetch for the original suggestion and for his continued interest.

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As a result of experiments aimed at increasing the efficiency of the tuberculin test applied to dairy cattle an alternative procedure to save the time and labour of both farmer and veterinary surgeon has been introduced. In recent years the test used has required two injections. From experiments carried out on nearly 10,000 cattle there has been evolved a single injection test which the Tuberculosis Committee of the Agricultural Research Council are satisfied is as effective as the double one. The Secretary of State for Scotland has therefore modified the directions given in 1929 on the manner of carrying out the tuberculin test of an animal for the purposes of the Milk (Special Designations) Orders (Scotland) 1936–44. The test may now be made either by the double intradermal method as hitherto or by the method of the single intradermal comparative test. The experiments showed a close similarity between the results yielded by the two tests. In attested and tuberculin-tested herds the single intradermal test gave the more accurate result in the few discrepant cases that occurred.

Medical Memoranda

Calciferol in Tuberculous Peritonitis with Disseminated Tuberculosis

While the value of calciferol in the treatment of lupus vulgaris is now established, reports of its use in other tuberculous conditions, with the exception of adenitis, are few. No claims can be made for a preparation after its apparently successful use in an isolated instance, but the dramatic improvement in the following case renders it worthy of record.

CASE REPORT

On July 8, 1946, a girl aged 19 was admitted to hospital with a lung infiltration of an exudative character in the right mid-zone with no expectoration. This lesion, which was not then diagnosed as being tuberculous, had not resolved when she was discharged from hospital a month later. She did not attend as an out-patient as instructed, and stayed at home until May 5, 1947, when she was admitted to hospital with acute abdominal pain and signs suggestive of tuberculous peritonitis. A subsequent laparotomy showed free fluid in the peritoneal cavity and studding of the peritoneum with numerous tubercles; the diagnosis was confirmed by microscopical section.

On July 3 she was transferred to a sanatorium, but her condition deteriorated steadily; renal and vesical tuberculosis were diagnosed. Intravenous pyelography showed changes of the renal calices consistent with tuberculosis of the kidney, and cystoscopy revealed tuberculous granulations in the bladder. Moreover, tubercle bacilli were found in the urine on repeated investigations. The laparotomy wound, which had broken down a month after operation, showed no sign of healing. On Sept. 22 she was transferred to hospital as no longer suitable for sanatorium treatment and came under our observation for the first time.

On admission she was extremely pale and wasted; the laparotomy wound was discharging freely and she suffered from severe abdominal pain and tenderness, especially in the right loin, and frequency of micturition. She had a high swinging temperature ranging from 97 to 102° F. (36.1 to 38.9° C.) and appeared to be going downhill rapidly, and the prognosis was considered to be extremely grave. This state of affairs persisted for two months. On Nov. 19, in view of the grave nature of her condition, it was felt that as a last resort treatment with high-potency "ostelin" (Glaxo) might be worthy of trial, and we decided, her blood chemistry being normal, to give her 100,000 i.u. daily. Within seven days the temperature became normal, and at the end of 14 days the abdominal pain had completely subsided and the laparotomy wound had healed. No toxic manifestations were observed. Owing to the renal condition the drug was discontinued for 14 days; then another 14-day course was given. Since then steady progress has been maintained; the patient remains apyrexial, her appetite has improved, and her weight increased from 4 st. 12 lb. to 6 st. (30.84 to 38.1 kg.). No tubercle bacilli can now be demonstrated in repeated examinations of the urine. The lung lesion, which has shown a slow but steady tendency towards resolution throughout, is now almost completely healed. It has never been associated with the expectoration of sputum.

The very marked improvement in which the appearance of the patient changed from that of a moribund case of tuberculosis to one of returning health and vitality we feel cannot be dissociated from the administration of the calciferol. It is suggested that the treatment of similar lesions under controlled conditions with this preparation is worthy of more extensive trial.

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Recent Advances in Public Health, by J. L. Burn (J. and A. Churchill, 25s.), is an informative and interesting book on many aspects of public health not discussed in the ordinary textbook—for example, problem families, care of the cerebral palsied child, the care of the premature infant, municipal foot health services, road safety, human-milk bureaux. Dr. Burn does not refer to marriage guidance, which some consider to be complementary to child guidance and equally important to the mental health of the child. In other sections he considers the latest contributions to the solution of old problems, notably water purification and air-borne infections. The sections on handicapped children will be found most informative. The book should be widely read by public-health officers wishing to keep themselves up to date and can be recommended to D.P.H. students.

Reviews

TREASURY OF INHERITANCE

The Treasury of Human Inheritance. Vol. IV. Nervous Diseases and Muscular Dystrophies. Part V. Dystrophia Myotonica and Allied Diseases. By Julia Bell, M.A., F.R.C.P. With Clinical Notes by J. Purdon Martin, M.D., F.R.C.P. With pedigree plates XLV-LXI, Figs. 840-1,063. (Pp. 68. 21s.) London: Cambridge University Press. 1947.

Few research workers have contributed so much to medical genetics as has Dr. Julia Bell. Successive monographs of the *Treasury of Human Inheritance* have revealed her flair for thorough reviews of the literature, for the drawing up of clear pedigrees, for careful selection of what is important in the case notes, and for marshalling concisely the outstanding conclusions to be drawn from the data presented. The whole series is indeed a treasury for research workers. With this number Dr. Bell brings to an end the fourth volume, which deals with nervous diseases and muscular dystrophies. It is greatly to be hoped that she will now investigate other diseases, for with the appearance of each monograph one more condition falls into the small but, thanks largely to her, growing list of inherited disabilities to which we have a sure and convenient genetic guide.

The present number is especially interesting and includes valuable clinical notes by Dr. Purdon Martin. It also includes accounts of a long series of cases of dystrophia myotonica collected by Dr. Otto Maas, many of which are now published for the first time. Dr. Bell considers that Thomsen's disease and dystrophia myotonica are separate conditions. In this she differs from some authorities, notably Dr. Maas himself. In transmission Thomsen's disease behaves as a simple dominant. This is strictly true of the carefully compiled pedigree of Thomsen's own family, which has been enlarged and brought up to date by his great-nephew, Nissen. Dystrophia myotonica behaves somewhat as though it were due to an irregularly expressed dominant gene, but there are some strange anomalies. First, Maas finds incipient signs of the disease in all or most of the members of sibships containing affected persons. Secondly, apparently normal brothers and sisters of affected persons tend on the average to die at a younger age than they should. Thirdly, the correlation between members of the same family in age at onset is very low. Fourthly, there is a similar lack of association in severity. Finally, there appears to be true anticipation—that is, the disease tends to appear at an earlier age in later generations—even when appropriate statistical allowances have been made. There seems to be no known genetic mechanism which could explain these remarkable findings. Future research workers who solve the problem will be grateful to Dr. Bell for providing a fine body of data on which to test their theories.

The standard of production is as high as ever; it is of an excellence seldom encountered these days. It is wise, however, to bind the separate parts as soon as possible, for owing to the size of the pages and the heavy plates they are apt to disintegrate quickly unless this is done.

J. A. FRASER ROBERTS.

RHESUS FACTOR

Rh. Its Relation to Congenital Hemolytic Disease and to Intragroup Transfusion Reactions. By Edith L. Potter, M.D., Ph.D. (Pp. 344; illustrated. $5.50 or £1 10s. 6d.) Chicago: The Year Book Publishers Inc. London: H. K. Lewis and Co. 1947.

Dr. Potter is to be congratulated on this admirable monograph on the Rh factor. A general survey of the Rh antigens and antibodies in relation to haemolytic disease and transfusion reactions is followed by a good historical chapter on the discovery of the Rh factor. The author discusses the general properties of Rh antigens and antibodies and includes a section on the historical development of the nomenclature; she recapitulates Wiener's terminological vacillations, which caused so much confusion. In the section on the inheritance and antigenic structure of Rh–Hr she does rather less than justice to the part played by British workers in clarifying the situation, for she does not make clear that it was they who first suggested the true complexity of the Rh structure at a time when Wiener and other American writers had quite failed to understand the reciprocal relations of Rh and Hr. Thus Fisher (p. 69) did not "postulate that H′ is inherited as an allele of R′," for at that time Wiener denied that there was more than one Hr antigen and still considered it as an entirely separate antigenic system. The truth is that the unassailable logic of Fisher's analysis and synthesis has compelled American writers to accept his interpretation, and they have subsequently applied the Rh–Hr terminology to Fisher's Cc Dd Ee notation by the simple device of applying to Hr the ′ or ″ indices to indicate their allelic relationships to the Rh antigens.

Dr. Potter derives only 27 genotypes from Fisher's notation instead of 36, even the common R_1R_2 CDe–cDE being omitted. If this omission implies that it is impossible to distinguish serologically all the possible genotypes, she does not make that clear. The difference is not inherent in the notation, but perhaps Dr. Potter has overlooked the difference between linked and unlinked genes. In any case it would surely be better to include the common R_1R_2 CDe–cDE instead of the very rare R_2R_0 CDE–cDe. She fully considers the current nomenclature, and, while wisely distrusting systems based on arbitrary numbers, approves of Graydon and Simmons's slight modification of the present system. There is a useful table of the Rh-positive and Rh-negative distribution in different races, including such data as are at present available on the sub-types. She rightly condemns Wiener's biological test as dangerous, emphasizes the importance of giving only Rh-negative blood to Rh-negative women, and stresses the permanence of maternal iso-immunization. She presents an excellent review of haemolytic disease and classification of affected infants, the morbid anatomy and histology being beautifully illustrated. The sections on diagnosis and treatment could hardly be improved.

In the section on the significance of the homozygous state among the fathers of affected children Dr. Potter (p. 133) has overlooked the fact that her sample of 102 Rh-negative mothers is not a random sample but very highly selected. In relation to the occurrence of the disease in a second child the chance that the heterozygous father will produce the necessary two successive Rh-positive children is only one in four, whereas of course the homozygous father produces only Rh-positive children. There is thus inevitably a selection in favour of the homozygous state of the fathers of four in one.

In conclusion it may be said that Dr. Potter has written a monograph on the Rh factor which no one doing practical work in this subject should be without. While she does not present anything new for those who have followed the evolution of knowledge about haemolytic disease from the beginning, she provides a most useful summary of the present state of knowledge and a complete bibliography that will help everyone working in this field.

D. F. CAPPELL.

FOOD POISONING

Food Poisoning. Its Nature, History and Causation: Measures for its Prevention and Control. By Elliot B. Dewberry. Foreword by Gerald R. Leighton, M.D., D.Sc., F.R.S.Ed. In Three Parts, with Appendixes. Second edition. (Pp. 246; illustrated. 17s. 6d.) London: Leonard Hill, Ltd. 1947.

The publication of a second edition of this book within four years shows that it has had a considerable appeal. While the author is not himself an expert upon these complicated problems, he has carefully studied the literature and gives us a reliable and reasonably complete account of the various aspects of food poisoning. He has greatly improved the account of food poisoning due to staphylococci, which was very inadequately treated in the first edition, and describes it in detail in a separate chapter of 21 pages. He devotes sufficient space to discussing salmonella poisoning and infections, and perhaps more to an account of botulism than its comparative rarity demands. Other types of food poisoning considered are those caused by poisonous metals, plants, fungi, fish, and shellfish, and there is a short account of food allergy. In three appendices he describes the laboratory investigation of outbreaks, steps recommended by the Ministry of Health to investigate outbreaks, and the identification of *Salmonella* types. There are a few omissions, but the author does give a reasonably complete and accurate account of the subject. There are a number

of attractive illustrations, mostly of people prominent in the elucidation of food poisoning. In any new edition it would be helpful to give some account of precautions which should be taken in communal cookery establishments to reduce the risks of food poisoning.

WILLIAM SAVAGE.

THE EAR

Kurzes Handbuch der Ohrenheilkunde. By Prof. Hermann Marx. Second edition. (Pp. 888; 499 figures. Paper covers Rm. 46; stiff covers Rm. 48.50.) Jena: Gustav Fischer. 1947.

This book is a second and larger edition of the short handbook on diseases of the ear by Prof. Marx published in 1938. It is not a short textbook, as the title suggests, but a full and detailed work of 848 pages, profusely illustrated—a reference book, indeed, for the advanced postgraduate student and beyond the compass of an undergraduate. There is a long bibliography, mostly of German authors; references to British and American literature are scanty. The illustrations are excellent and depict a wide range of clinical conditions and pathological anatomy. The photographs of the macula and the crista with its cupula are particularly fine. The pictures of the various types of mastoid swelling and of different degrees of facial paresis are useful to the student. The photomicrographs illustrating chronic adhesive processes in the middle ear are interesting.

In the first chapter the author clearly describes and illustrates the development and comparative anatomy of the ear in relation to the visceral arches. He fully discusses the difficult physiology of balance and hearing. Marx uses the earlier Continental form of audiogram with the normal threshold line shown as a curve, which may at first confuse British and American readers. He is lukewarm in his appraisal of the fenestration operation for otosclerosis. He gives a good survey of labyrinthitis, but his account of it, as of the intracranial complications of mastoiditis, is based on work done before treatment with penicillin was started, and much of the operative work described is now almost obsolete. He fully describes open drainage of brain abscess, but this procedure is now falling into disrepute. Marx prefers surgery to radiotherapy for the treatment of carcinoma of the ear. There is an extensive section on tumours of the acoustic nerve.

STEPHEN SUGGIT.

INSTRUCTION FOR WOMEN

Womanhood. By Margaret Moore White, M.D., F.R.C.S., M.R.C.O.G. (Pp. 107. 7s. 6d.) London: Cassell and Co., Ltd. 1947.

This book is written for girls and women to enable them to understand the physiology of the various events that take place in their lives between puberty and the menopause. The author begins by describing events at puberty, including menstruation, and gives sensible advice about menstrual hygiene. In three chapters she discusses various aspects of marriage—preparation and early years, birth control, and sterility. She then considers antenatal care, labour, and the lying-in period. Advice on infant feeding and on the problems of infancy and early childhood follows. In the final chapter she discusses the menopause.

A well-balanced outlook and absence of sentimentality characterize the book. The factual information is well laid out and complete, though the author might have further stressed one or two points. These include the dangers of intrauterine appliances for contraception, and the dangers to life and health of criminally induced abortion, whether performed by the pregnant woman herself or by an unskilled accomplice. The description and illustration of the method of vaginal douching, while excellent in themselves, would appear more appropriately in a different chapter from that on pregnancy. The present arrangement might mislead a woman with little medical knowledge to associate douching with pregnancy. This book will certainly be useful to women of all ages and will appeal especially to the young. Adolescents will find it interesting, and it provides mothers with authoritative information to pass on to daughters reaching adult life. The general lay-out and production are excellent, and it is easy to read. The illustrations consist of line drawings and diagrams by Dr. Gwynne Jones and are entirely adequate for their purpose.

JOSEPHINE BARNES.

BOOKS RECEIVED

[Review is not precluded by notice here of books recently received]

Diabetes Mellitus in General Practice. By Arthur R. Colwell, M.D. (Pp. 336. 39s.) Chicago: The Year Book Publishers. 1947.

A practical account intended primarily for the general practitioner.

Rehabilitation of the Physically Handicapped. By Henry H. Kessler, M.D., Ph.D. (Pp. 274. 20s.) London: Geoffrey Cumberlege. 1947.

A general account of the organization and methods of rehabilitation in the U.S.A.

The Psychology of the Adolescent. By Leta S. Hollingworth, Ph.D. (Pp. 188. 10s. 6d.) London: Staples Press. 1947.

A practical account for parents and teachers.

Aids to Gynaecology. By W. R. Winterton, M.A., M.B., B.Ch., F.R.C.S., M.R.C.O.G. 10th ed. (Pp. 184. 5s.) London: Baillière, Tindall and Cox. 1947.

This booklet has been revised and new material on chemotherapy added.

Chemical and Physical Investigations on Dairy Products. By H. Eilers *et al.* (Pp. 215. 21s.) New York and Amsterdam: Elsevier Publishing Company. 1947.

A variety of papers on research into dairy products carried out in Holland.

Eskimo Doctor. By Aage Gilberg. Translated by Karin Elliott. (Pp. 150. 15s.) London: George Allen and Unwin. 1948.

A doctor's life in North Greenland.

Ernaering og Folkehelse. By Sir Robert McCarrison. (Pp. 94. No price.) Oslo: Kjemp Mot Kreft Med Kunnskap. 1947.

Norwegian translation of Sir Robert McCarrison's Cantor lectures (1936) on "Nutrition and National Health."

The Almoner. By I. F. Beck, A.M.I.A. (Pp. 66. 3s. 6d.) London: Council of the Institute of Almoners. 1948.

A short account of social service and the almoner.

A Picture-Book of Evolution. By Surgeon Rear-Admiral C. M. Beadnell, C.B., K.H.P., M.R.C.S. 4th ed. (Pp. 284. 15s.) London: Watts. 1948.

An account of evolution for the layman, with many illustrations.

Feeding Under Fives. By Nell Heaton. (Pp. 106. 5s.) London: Faber and Faber. 1948.

A practical book for the busy mother.

Remedial Exercises for Certain Diseases of the Heart and Lungs. By Hester S. Angove, M.C.S.P. (Pp. 181. 10s. 6d.) London: Faber and Faber. 1946.

A manual for students and practitioners of physiotherapy.

Principles and Practice of the Rorschach Personality Test. By W. Mons. (Pp. 164. 12s. 6d.) London: Faber and Faber. 1947.

An exposition of the test; intended for psychiatrists.

Practical Food Inspection. Vol. I. Meat Inspection. By C. R. A. Martin. 3rd ed. (Pp. 316. 18s.) London: H. K. Lewis. 1947.

A practical account intended for inspectors of food.

Why Not English? By Peter D. Ridge-Beedle. (Pp. 118. 10s. 6d.) Glasgow: The Stratford Press. 1947.

A new alphabet to simplify the spelling of English.

Wege, Ziele und Grenzen der Operativen Chirurgie. By Eduard Melchior. (Pp. 161. 6.80 Swiss francs.) Verlag, Berne: A. Francke. 1947.

An introduction to the principles of operative surgery.

The Philosophy of a Scientist. By R. G. Gordon, M.D., D.Sc., F.R.C.P.Ed. (Pp. 206. 16s.) London: Hutchinson. 1947.

The author discusses such topics as free will, deity, values, and immortal life.

Chronic Ill-Health. By Rosa Ford, M.B., D.O. (Pp. 104. 6s.) London: Henry Kimpton. 1948.

The relief of certain disorders by eradicating sepsis from the paranasal sinuses.

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PUBLIC OPINION

An American journalist recently observed that there were at the moment three great powers—the U.S.A., the U.S.S.R., and public opinion. In our smaller world of medicine the three powers are the British Medical Association, the Ministry of Health, and, again, public opinion. Since the beginning of December the public has been bemused by the controversy energetically joined on both sides by the medical profession and Mr. Aneurin Bevan. The results of the plebiscite, to judge from the reaction to it of the national and provincial press, have convinced the public that the medical profession has serious grounds for disquiet about the National Health Service Act in its present form. The overwhelming vote of disapproval by whole-time Government medical officers, whole-time medical officers of health, and the young men working whole-time in the voluntary hospitals has convinced lay opinion that the opposition is not the result of political agitation or the result only of B.M.A. propaganda. As Professor J. H. Dible so well put it in a letter to *The Times*[1]: "The medical profession has a deeply rooted tradition of freedom, and it is the experience of many of us that whole-time medical service removes this and with it many of those things, tangible and intangible, which the profession cherishes dearly." *The Times*,[2] in a leading article commenting on the plebiscite, erred in stating that "the British Medical Association had already virtually committed itself to organizing a boycott of the entire service if three main groups concerned . . . voted by a majority against entering the service. . . ." The opposition of the B.M.A., it is evidently necessary to reiterate, is not against the Service as such, but against those features of the Act and those proposals of the Minister which lead towards a whole-time salaried State medical service. Opposition is aimed at continuing and securing "a deeply rooted tradition of freedom."

The first reaction of the Ministry of Health to the plebiscite was in the form of a statement to the Press Association by a Ministry official, who said: "The Act will come into operation on July 5 in accordance with Parliament's decision." In reply to a question in the House of Commons,[3] Mr. Bevan himself observed, "I remain ready to co-operate closely with any professional spokesmen who want, with me, to make the new service a success," adding later that he "would not be entitled to go behind the back of the House and suggest that Parliament can surrender any position it has taken up." Comments by political correspondents suggest that the Government is more than perturbed by the results of the plebiscite, and some papers suggest the names of possible mediators, among them Mr. Attlee. In an article in the *Sunday Times*,[4] for example, Lord Horder writes: "The occasion merits his [Mr. Attlee's] direct intervention, for the issue is a vital one in the life of the nation" Lord Horder sees two ways in which "the present impasse may be resolved. One is for the Government to force the position on its economic basis, the other is to change the present atmosphere universally recognized as thoroughly bad and restore our confidence." He observes that the first alternative seems to determine the Government's present attitude. We consider that the last thing the medical profession will tolerate is financial coercion, and it is ironical that a Socialist Government should contemplate using such an ugly weapon. In asking the question, "How can confidence be restored?" Lord Horder gives this answer: "By doing something (not making promises) which will allay the doctor's present fear that the Act, as it now stands, enables the Government to make him a whole-time salaried servant of the State." Mr. Bevan has unfortunately made it extremely difficult—and in the eyes of some impossible—for this confidence to be restored. The *Glasgow Herald*,[5] for example, considers that "a workable health service will be forthcoming only at the cost of concessions of a more definite nature than they [the Government] have seen their way to make so far. The achievement thereby of a workable health service would be a victory for common sense. If in the eyes of Mr. Bevan such an achievement now represents only a personal defeat, then it is time for his replacement." The *Scotsman*[6] writes: "The result of the plebiscite demonstrates that the doctors are in earnest in their stand for professional freedom, and it must be hoped that the Government will . . . make further efforts to remove the causes of disagreement." The *Yorkshire Post*[7] hopes "that this impressive demonstration of feeling . . . will convince the Minister of Health of the need to seek a settlement by compromise." *The Times*[8] writes, "The Minister of Health must give due weight to this remarkable expression of doctors' feelings. . . . The results of the ballot inevitably require the B.M.A. to make the next move, and to flout an Act of Parliament sets an ugly precedent. But Mr. Bevan has an essential part to play in seeking a fair settlement." The *Daily Telegraph*[9] states, "Even at this late hour the Minister of Health should earnestly seek lines of agreement . . . the situation is a nationally unpleasant one, but should no change for the better prove possible the responsibility for the tactics, or absence of them, which have brought it about must be placed squarely upon Mr. Bevan's shoulders." The *Manchester Guardian*[9] writes, "There is one hopeful feature of the situation. Both sides are strong enough to stand firm against each other. But both are, by the same token, strong enough to meet each other. . . . The B.M.A. has had an undeniable success over its plebiscite, and that strengthens its hands in negotiations. But it would be gravely mistaken if it assumed that its success in winning the support of most doctors entitled it to dispense with negotiation." Mr. Francis

[1] *The Times*, Feb. 21, 1948.
[2] Ibid., Feb. 19, 1948.
[3] *Parliamentary Debates* (Hansard), Feb. 19, 1948. 447. 1308.
[4] The *Sunday Times*, Feb. 22, 1948.
[5] The *Glasgow Herald*, Feb. 20, 1948.
[6] The *Scotsman*, Feb. 19, 1948.
[7] The *Yorkshire Post*, Feb. 19, 1948.
[8] The *Daily Telegraph*, Feb. 19, 1948.
[9] The *Manchester Guardian*, Feb. 19, 1948.
[10] The *Sunday Chronicle*, Feb. 22, 1948.
[11] The *Observer*, Feb. 22, 1948.

Williams,[10] giving the "Socialist viewpoint," says this: "In the dispute on the National Health Service the next move is with the British Medical Association. That, I think, can be taken as the Government's definite opinion." A leading article in the *Observer*[11] puts the case of the medical profession in a way no other paper has yet done. "Socialists," the leader-writer says, "have not paid enough attention to the difference between nationalizing an industry and nationalizing a profession with a long and valued tradition of independence." Discussing the approach of State Socialism towards a National Health Service, the *Observer* writes: "In dealing with medicine this may not be the right way: it tends to give planning priority over persons. Yet in a medical service, profoundly influenced by human relationships and qualities of character, success depends far more on persons than on streamlined plans." Mr. Bevan, the *Observer* points out, "has set himself to bring the whole plan into operation—on paper—this year. He wants the credit for all of it to figure—on paper—in his party's books. He accuses the doctors of 'playing politics,' but his own view of the project has always been from a window in Whitehall." The *Observer* considers that the best way out would be an agreement to proceed by stages, and concludes thus: "The Government must speak to the doctors through someone in whom they can feel confidence; Mr. Bevan should ask himself whether he is the right man."

Mr. Aneurin Bevan has said some hard things about the B.M.A., and the plebiscite has shown that all of his observations were wide of the mark. We think it would be a pity if, during the coming weeks, principles continued to degenerate into personalities. To talk in terms of "battle," "victory," "defeat," will not make it any easier to arrive at a just solution of the present problem. The important thing is to realize the existence and nature of the problem and to attempt to solve it not by scoring debating points or by denigrating opponents. The medical profession and the Minister of Health have one important end in common and that is to provide an efficient medical service for the people of this country. This common purpose is so important that it would be a tragedy if the Minister of Health failed to secure the co-operation of the medical profession by refusing to make those adjustments necessary to remove the grave doubts and fears of the 40,000 British medical men and women who have expressed disapproval of the Act in its present form.

NUTRITIONAL REHABILITATION

The provision of sufficient food for the populations of countries which have been devastated or disorganized by war, or which merely have been left behind in the economic race for existence, is one of the first steps necessary for the re-establishment of peace and prosperity throughout the world. Dr. Magnus Pyke[1] has outlined the measures he considers to be most essential for restoring adequate nutrition in Europe. The most urgent necessity is to provide more calories, more food to fill empty stomachs. Quantity rather than quality is the first consideration, and in general vegetable foodstuffs must be provided before animal foodstuffs, which yield fewer calories per acre of land cultivated. It was of course for this reason that pasture was ploughed to grow wheat in Britain during the war. Secondly, the total food supplies of a country should be planned so that the amounts of the various nutrients made available approximate as closely as possible to the calculated requirements for the whole population. Thus in Britain an effort was made during the war to increase the vitamin-A intake by growing more carrots and by conducting a publicity campaign to persuade people to eat more of them. The success of these well-meant endeavours, however, was imperilled by the public's preference for onions, generally considered to have very little nutritive value. The next step is to distribute the foods available among the various groups of the population according to their needs. Thus young children and pregnant and lactating women, who are necessary for the survival of the country's population, should be given extra milk. Manual workers, whose efforts are important for the economic survival of the country, should be given extra meals without coupons at their place of work. The measures taken to effect these improvements should be guided by trustworthy knowledge of the amounts of the various nutrients consumed by the population in question, though it is difficult to estimate correctly the supplies obtained from unofficial sources. In Austria, for example, the official figures for the amount of food eaten suggested at one time that the whole population was suffering from acute starvation. The actual state of the people, however, was much less alarming.

Somewhat different problems faced Dr. D. P. Cuthbertson in recommending methods for improving nutrition in Newfoundland. The malnutrition of the 320,000 inhabitants of this bleak land cannot be attributed to the war, for it was known to exist previously. When in 1945 Cuthbertson was sent by the Medical Research Council to visit the island on behalf of the Dominions Office he was impressed mainly by the economic depression there and by the apathy of most of the people. He had time to make only a superficial examination of their nutritional state, but the incidence of frank signs of malnutrition seemed to be much lower than previous investigators had reported. There was little or no evidence of beriberi, rickets, scurvy, or gross deficiency of vitamin A. Possibly the introduction of vitaminized flour had caused some improvement since previous surveys. The general poverty of the diet was beyond dispute, but it was difficult to distinguish whether the prevailing apathy was due to malnutrition or the diet was poor because more vigorous efforts were not made to procure better food.

Though unable to answer this question Cuthbertson made many practical suggestions for bettering both nutrition and the general economy. Since the cod-fish is the main source of food in Newfoundland better methods should be adopted for preserving its flesh and extracting oil from its liver. More efficient processing of these valuable products would improve nutrition in the island and increase the value of its exports. Consumption of more cod-liver oil at home would eliminate the danger of vitamin-A deficiency. No less

[1] *J. Amer. diet. Ass.*, 1947, **23**, 90.
[2] Cuthbertson D. P., *Report on Nutrition in Newfoundland*, 1947. London: H.M.S.O.
[3] *British Medical Journal*, 1946, **2**, 885.
[4] Ibid., 1947, **2**, 288.

important is the need to increase supplies of vegetables and dairy products and to overcome the difficulties in transport caused by a rugged and indented coast-line. A publicity campaign should be launched to encourage the production of vegetables in smallholdings and gardens and to teach the conservation of food in cooking. The low-extraction flour which is now used should be replaced by flour of 78–80% extraction, fortified with calcium and iron. Other suggestions remind us of the primitive conditions prevailing in the interior of the island and of the cold winter climate. Cuthbertson recommends that in the regions unsuitable for agriculture herds of caribou should be allowed to roam protected against unauthorized slaughter. Husky dogs, between their seasons of hauling sledges, should not be allowed to run wild among grazing animals.

The application of scientific principles to the production and distribution of foodstuffs has already helped Britain and other countries to avoid the grosser effects of malnutrition. Recently further privations have threatened us, but our knowledge of the biochemistry and physiology of nutrition has increased. We now understand better the interrelations between requirements for various nutrients, the vitamin-B_2 complex, and—so far as experimental animals are concerned—the various functions of vitamin E. Mellanby's[3 4] important experiments have raised grave doubts about the wisdom of "improving" flour. The time is past when scientific advice on nutrition consisted merely in prescribing larger amounts of milk, meat, vegetables, and other protective foods. In order to exert his full influence in future either the dietitian may have to follow Cuthbertson's example and, turning agriculturist, consider how the necessary foodstuffs may be obtained, or he must emulate Pyke and indicate how health may best be sustained on such little food as is available. When it is necessary to resort to the second unhappy alternative prompt action in applying the results of recent research may well be of the utmost importance.

STREPTOMYCIN BACTERICIDAL

Streptomycin isolated by Schatz, Bugie, and Waksman[1] in 1944 from *Actinomyces griseus* has come into prominence largely because it is the only antibiotic which so far has been proved to influence tuberculous infections in man. In addition streptomycin is far superior to any other known drug in the treatment of tularaemia and of meningitis due to *Haemophilus influenzae*, and in infections due to pleuropneumonia-like organisms it appears to act specifically, being more effective and less toxic than gold salts.

In a paper that appears at p. 382 of this issue L. P. Garrod suggests that streptomycin may have a wider application, particularly in infections due to Gram-negative organisms. It is curious that up to the present there has been little evidence to prove that streptomycin is actually bactericidal, though the tendency in the U.S.A. to administer the drug only twice daily for the treatment of tuberculosis can hardly be explained solely on bacteriostasis, for one or two daily injections will not maintain a constantly bacteriostatic concentration in the blood. Garrod's important experiments show conclusively that streptomycin undoubtedly has a bactericidal action and that a single dose of the drug may produce a blood concentration which exceeds 30 μg. per ml. This may well be bactericidal *in vivo*. The finding that high concentrations of streptomycin are rapidly bactericidal *in vitro* has an extremely important application in local treatment, whether this is applied to infected surfaces, the inflamed meninges, or the infected urinary tract. It seems possible that streptomycin may prove an invaluable drug in the treatment of infections of the urinary tract, for streptomycin, like penicillin, is excreted in the urine, where it is found in high concentrations which are now shown to be quite high enough to be bactericidal. *Bact. aerogenes, Bact. coli,* and *Pyocyaneus pyocyanea* in long-established and otherwise resistant urinary tract infections have been rapidly killed. If treatment is going to succeed, a count of several hundred millions per ml. before treatment is reduced to one of a few hundreds or thousands per ml. within 24 hours or less. It seems also that a very brief period of treatment is successful, for permanent cures of long-standing infections have been obtained after six, four, or even three doses of 0.5 g. There is, however, one drawback to the use of streptomycin, and that is the rapidity with which resistant strains of bacteria develop whenever the bacterial population exposed to streptomycin is large. It would seem as if in a large population some members are almost always naturally resistant, so that when their more susceptible brothers are killed by streptomycin they can flourish.

In the treatment of long-standing urinary infections there are now two drugs which are superior to sulphathiazole or sulphadiazine—they are streptomycin and mandelamine (methenamine mandelate). The sulphonamides have the disadvantage that in acid urine they may deposit as crystals in the urinary tubules. It remains to be seen whether streptomycin or mandelamine is the more satisfactory. According to a recent report by Duca and Scudi[2] mandelamine does not readily give rise to resistant strains.

FREEDOM TO PUBLISH

Fears that censorship might hamper the free publication of opinion by doctors employed in the National Health Service have been allayed for the time being by Mr. Bevan, and we welcome his reply to a Parliamentary question on Feb. 12.

Col. Stoddard-Scott asked the Minister of Health whether those doctors and dentists who entered the National Health Service would have freedom to publish articles and books with regard to the organization and administration of the Health Service and freedom to publish such articles without having to seek permission of individuals or authorities. Mr. Bevan replied: "So far as I am concerned, yes, Sir."

This amplifies his reply to the question that Col. Stoddard-Scott put on Jan. 29. He then inquired whether doctors and dentists who entered the National Health Service would have complete freedom to publish articles and books without having to seek permission, and he asked for an assurance that there would be no attempt to suppress freedom of publication. Mr. Bevan replied that so far as he was concerned there would be no restriction whatsoever in the National Health Service on the publication of *scientific or clinical* writings. Mr. Bevan's saying in the debate on Feb. 9 that there was no doubt about his intentions hardly clarified the issue, and his remark that

[1] Schatz, A., Bugie, E., and Waksman, S. A. (1944). *Proc. Soc. exp. Biol., N.Y.*, **55**, 66.
[2] Duca, C. J., and Scudi, J. V. (1947). Ibid., **66**, 123.

Mr. Butler in expressing his doubts was "leaving a trail of slime behind him" showed a singular unawareness of the value that educated men attach to their freedom to express their minds on all professional matters, administrative as well as scientific.

Some of the letters that we publish at present appear over pseudonyms. In nearly every case they do so for the reason that the writer is employed by a local authority or is in the armed Forces and is therefore prevented from criticizing his employing body, either because a superior officer would refuse to allow publication, or because publication might jeopardize the writer's chances of promotion. Mr. Bevan assures us that censorship will not occur, and we accept his word. But what of future Ministers of Health? We have no assurance that they will take the same view, and they will not be bound by a predecessor's reply to a question in Parliament. In view of the restrictions prevailing at present in State medical services it is highly desirable that complete freedom to publish opinions on any professional matter be a condition incorporated in the Act. No authority should have the arbitrary power to conceal criticism of itself. A health service especially is likely to require fundamental changes if it is to provide satisfactory conditions for the practice of such a swiftly changing science as medicine; unless these can be freely proposed and discussed by critics within the service, its life will become choked in a jungle of precedents.

ANTI-Rh SERUM NOMENCLATURE

It is natural and common that when a new phenomenon has been discovered and as yet is only partly understood a system of nomenclature should be introduced which is proved by later work to be either inconsistent with the facts or inconvenient in practical use. It had been hoped by some that such a position would now be recognized in the case of the anti-Rh sera, and that the Review Board appointed by the Surgeon General of the United States Public Health Service to advise on nomenclature might have adopted without reservation the Fisher–Race system, as opposed to the earlier Wiener system, in favour of which priority is the chief argument. Reading only a little between the lines of the Review Board's report,[1] it can be assumed that its members would have liked to follow the above suggestion, but it seems they felt unable to go further for the present than to recommend the use of both systems in parallel, the Wiener nomenclature being given first on any label, and the Fisher–Race designation following in brackets. There is certainly no lack of candour in the Board's comments. In favour of the Wiener theory it is stated that it has priority and "is used by nearly all workers on the subject in the western hemisphere." Against it are "incomplete specifications, changed rapidly from year to year"; "complications, both typographical and genetic, of subscripts, superscripts, numbers, primes and other symbols"; and "the doubtful assumption of multiple antigens produced by a single gene." It is recalled also that following publication of the Fisher–Race theory and proposals for nomenclature[2] Wiener not only denied the linkage postulate on which the theory is based but stated that his own views would preclude the existence of the two additional (d and e) factors propounded by Fisher, whereas in the event anti-e serum was found by Mourant and anti-d by Diamond, "thus bearing out Fisher's predictions." In favour of the Fisher–Race nomenclature the Board recognized that "it is in wide usage in England, is gaining in usage in the western hemisphere, and hence may become the international standard." Against it only two objections are raised—its lack of priority, already mentioned, and that it "is based on a genetic hypothesis which is unproved." In the strictest sense of the words that is a correct statement of the position, though a theory which makes a correct prediction is normally regarded as having been "confirmed" to that extent. "Proof" in these matters is a relative term, and the real question confronting the Board was what degree of proof was necessary to justify the abandonment of the prior, and in the United States the most widely used, system of nomenclature. While the immediate effect of the report in the United States will be to ensure the temporary confinement within brackets of the Fisher–Race descriptions, the Board's comments must none the less have gone a long way to encouraging its wider use by United States and other workers and thus rendering the present compromise transitional

[1] *Science*, 1948, **107**, 27.
[2] *Nature*, 1945 **155**, 542.

PASSAGE OF VITAMIN E TO THE HUMAN FOETUS

The discovery of vitamin E, some twenty years ago, was the outcome of observations by Evans and Burr[1] on the fertility of rats. Subsequent research has shown that this vitamin is needed for purposes other than reproduction, and particularly for the prevention of muscular degeneration.[2] Descriptions such as the "reproductive vitamin" or "anti-infertility" vitamin, however, have passed into general use, and the name "tocopherol," given to the vitamin after its isolation, indicates its connexion with childbirth. The most interesting chemical characteristic of the vitamin is its ability as an antioxidant to prevent the autoxidation of fats.[3] The results of intensive studies in this country[4] and in the U.S.A.[5] have indicated that its role in metabolism is to protect various unstable substances from untimely oxidation.

Although so much is known of the chemistry of vitamin E, and of the effects of its deficiency in various animals, evidence that it is required by human beings is still inconclusive. It has repeatedly been claimed that vitamin E is of use in the treatment of habitual abortion,[6] but sceptics have pointed out that abortions are often followed by full-term gestation even without special treatment.[7] Tocopherol, supplemented by inositol to aid its absorption, has been considered effective in the treatment of certain muscular disorders, but this observation has not yet been confirmed.[8] The report that the vitamin is beneficial in heart diseases[9] has not gained general acceptance.[10] We must, therefore, fall back on evidence of the presence and distribution of the vitamin in human blood and tissues in order to obtain some indication of its essential physiological purpose.

The first tests on human tissues were made by Evans and Burr. Using their original biological method they found that the placenta, the only organ examined, contained moderate amounts of the vitamin. More recently many workers have applied the convenient chemical method

[1] *Mem. Univ. Calif.*, 1927, **8**, 1.
[2] *J. Nutrit.*, 1936, **2**, 573; *Biochem. J.*, 1935, **29**, 788; *J. Hyg.*, 1939, **39**, 643.
[3] *J. biol. Chem.*, 1944, **154**, 317.
[4] *Biochem. J.*, 1940, **34**, 1231.
[5] *Advanc. Enzymol.*, 1946, **6**, 469.
[6] *Acta obstet. gynec. scand.*, 1933, **13**, 219; *Klin. Wschr.*, 1936, **15**, 1883; *British Medical Journal*, 1937, **2**, 1218.
[7] *Vitamin E, a Symposium*, p. 83, 1939, Heffer's, Cambridge.
[8] *Science*, 1945, **101**, 93.
[9] *Nature*, 1946, **157**, 772.
[10] *Lancet*, 1948, **1**, 102, 116.
[11] *Rec. Trav. chim. Pays-Bas*, 1938, **57**, 1351.
[12] *Proc. Soc. exp. Biol., N.Y.*, 1946, **61**, 369.
[13] *Klin. Wschr.*, 1947, **23/24**, 362.
[14] *Z. Geburtsh. Gynäk.*, 1946, **127**, 169.

devised by Emmerie and Engel,[11] particularly to blood plasma. By this means Straumjford and Quaife[12] have studied the transfer of vitamin from the mother to the foetus. They found in a survey of more than 50 women that the average level of tocopherol in the plasma during the first 24 weeks of pregnancy was 1.17 mg. per 100 ml., as against 1.04 mg. in normal adults. During the last 12 weeks of pregnancy a sharp rise to 1.62 mg. was observed, while at parturition the plasma from the umbilical cord contained only 0.34 mg. They remark that an increase in the tocopherol content of the plasma in the later stages of pregnancy is consistent with the well-established rise in the plasma lipoids. Similarly the lower level in the cord plasma is consistent with its lower lipoid content, and also with the action of the placenta in restricting the passage of other nutrients, including vitamin K.

More detailed investigations by Athanassiu,[13] which were, however, carried out on only 6 patients, offer an alternative explanation. He found that at the time of parturition the maternal serum contained 1.0–2.0 mg. of tocopherol per 100 ml., while the placental tissues contained 0.56–1.07 mg. He examined both venous and arterial serum from the cord, the former containing 1.25–2.0 mg. and the latter only 0.2–0.55 mg. per 100 ml. This suggests that the placenta does not obstruct the transfer of tocopherol from the maternal arterial circulation to the foetal venous circulation, but that the foetus absorbs the vitamin and so reduces its concentration in the arterial blood of the cord. It seems probable, therefore, that vitamin E is needed by the foetus, though it would be interesting to know whether the difference between the arterial and venous blood is peculiar to vitamin E or applies indiscriminately to all fatty constituents of the plasma. Athanassiu[14] found further evidence of the importance of vitamin E for human reproduction in the examination of blood serum from 90 women who had recently aborted. In 58 of these subjects values of under 0.3 mg. of tocopherol per 100 ml. were found, which suggests that hypovitaminosis E is a common feature in abortion. Confirmation of Athanassiu's observations will be awaited with interest, since they appear to add considerably to our knowledge of both the physiology and clinical importance of vitamin E.

BODY TEMPERATURE

Evidence suggesting that acetylcholine may be concerned with the mechanism which controls body temperature has lately been examined by Burn and Dutta at Oxford.[1] The apparently unrelated observation of Glauback and Pick[2] in 1931 that procaine causes a fall in body temperature acted as the starting point. Early last year Peczenik[3] reported that in mice the fall of temperature produced by procaine was greatly increased by adrenalectomy. A fall of 2.3° F. (1.25° C.), controllable with the adrenal glands working, became in the absence of adrenaline a "collapse"—with a fall in temperature averaging more than 8° F. (4.44° C.). The average survival time of these mice was about three and a half days. It thus appeared that adrenaline played some part in the maintenance of temperature, but there was a complication that Peczenik's mice had been subjected to the further operation of castration, and that an additional object of his research was to find out the part played, if any, by the various members of the steroid group of substances. He concluded that desoxycorticosterone, progesterone, and methyltestosterone all had a significant effect in reducing the fall in temperature induced by procaine.

A year earlier Dawes[4] at Oxford had noted that quinine, quinidine, and procaine counteracted the effect of acetylcholine on many types of tissue—particularly on the heart, intestine, and skeletal muscle. Later, de Elio, also at Oxford, showed that the action of acetylcholine could also be counteracted by atropine and "pethidine." This suggested, by one of those guesses which when successful are described as inspired, that it might be worth investigating whether any of these other substances also shared with procaine the property of reducing body temperature. The results of such an investigation are now reported by Burns and Dutta. It appears that atropine, "benadryl," pethidine, and quinidine all have the same effect as procaine on the body temperature of mice, and, further, that this effect is increased by adrenalectomy. These workers suggest, therefore, that since it is a common property of all these substances to depress the action of acetylcholine "it becomes probable that the maintenance of body temperature depends on a mechanism in which acetylcholine plays a part, and that the adrenal glands support such a mechanism." Tentative as it still is, this hypothesis must command respect. It should be noted, however, that the complications introduced by Peczenik's earlier work on steroid substances still remain, and also that temperature may be controlled not only by a depressant action on the one hand but also by a positive resistance to depression on the other—final adjustment being the result of a balance between the two. Such a mechanism is common in the control of other metabolic processes.

1 *Nature*, Lond., 1948, **161**, 18.
2 *Arch. exp. Path. Pharmakol.*, 1931, **162**, 551.
3 *Proc. roy. Soc. B.*, 1947, **134**, 218.
4 *Brit. J. Pharmacol.*, 1946, **1**, 90.

U.N. MEDICAL RELIEF

The International Children's Emergency Fund was set up by the United Nations in December, 1946, and it is among the most potentially beneficent organizations established since the war to combat the effects of famine and disease in the devastated areas of the world. The fund is now operating in 12 countries in Europe and also in China. It provides supplementary food—such as dried milk, oils, and vitamins—and medical supplies and assistance to children, as well as help for pregnant and lactating mothers. The medical programme envisaged includes extensive campaigns against tuberculosis by means of B.C.G. vaccination and against venereal disease, particularly in Poland, Italy, Rumania, and Hungary.

Unfortunately the British Government has been unable to contribute to the Fund the £1,000,000 requested, to which the United States Government, we are informed, is pledged to provide an additional 5¼ million dollars, which would not be made available if the British contribution came from voluntary sources. But this may not now hold good in view of the appeal for contributions to the United Nations Appeal for Children launched by the Lord Mayor of London on Feb. 23. The proceeds from this appeal will be divided between the International Children's Emergency Fund, Unesco, and certain voluntary societies working on behalf of children. The Government has agreed to allocate £100,000, part of which will go to the International Children's Emergency Fund, when £500,000 has been raised from voluntary sources in this country. Donations may be sent to the Lord Mayor, Mansion House, London.

Dr. J. F. Wilkinson, F.R.C.P., will deliver the Oliver-Sharpey Lectures before the Royal College of Physicians of London (Pall Mall East, S.W.) on Tuesday and Thursday, March 9 and 11, at 5 p.m. Subject: Concerning Megalocytic Anaemias.

ROCKEFELLER FOUNDATION

YELLOW FEVER INVESTIGATION

The latest report from the International Health Division of the Rockefeller Foundation shows that the Division is actively continuing its programme, which in the main has a threefold objective—research on certain specific diseases, with control work in the field; the building up of efficient State and local health services; and the support of public health education.

Many pages of this report are devoted to the control and investigation of yellow fever. During the past few years a study of epidemiological developments in South America has pointed strongly to the conclusion that there is a permanent jungle reservoir in that continent. All the localities in which jungle yellow fever is endemic or epidemic are situated at some headwater of the huge Orinoco–Amazon hydrographic system. Every one of the places where, at one time or another, yellow fever has occurred in half a dozen South American countries is precisely at a point of contact between the great jungle expanse and the outposts of human colonization. It seems reasonable to conclude that the Orinoco–Amazon jungle system constitutes a permanent reservoir of yellow fever; that the virus manifests itself constantly by human cases at the system's periphery; and that from several of these points epidemic waves may start, to invade non-immune or slightly immune regions where conditions still permit its transmission and propagation.

The report contains a detailed account of work done on yellow fever in Brazil and Colombia. In Africa, again, some investigations have been made on the epidemiology of yellow fever, the identification of the principal insect vectors and vertebrate hosts, and the means by which the virus is maintained between epidemic periods. Research is being carried out in six East and West African countries.

Malaria has also been the subject of study, and especially the action of anti-malarial agents. In certain parts of Peru the incidence of malaria is believed to be as high as, or higher than, anywhere else in the world. Spraying operations with D.D.T. have been carried out effectively there and elsewhere. Venezuela is a meeting place for some 32 species of anopheline fauna, including the chief malaria vectors, and presents an ideal field for research in endemic malaria. Here again D.D.T. has proved such a powerful weapon that according to the latest accounts the disease was retreating to a marked degree all through the northern parts of the country, and spraying squadrons, working full time, promised to keep malaria off the list of serious public health problems.

Much other work aided by the Division is reported concerning influenza and other respiratory diseases, rickettsial diseases, and nutrition.

Medical Care Surveys

The staff of the Division have visited health care projects in various parts of the world. Sweden was found to be the most advanced country in this respect. With regard to the National Health Service Act in Great Britain the report has this to say:

"This Act accepts the recommendation of the Goodenough Report that medical schools and their hospitals become partners in the national health service. Special importance in the teaching of medicine is laid on the prevention of disease and an appreciation of the part played by social environment in health and sickness. Because the preventive and social aspects of such training can be given only in the community, health centres are to be provided as an integral part of the system of undergraduate medical education. This increasing integration of the medical school with the health needs and medical care activities of its community was found to be the most significant trend towards raising the level of health."

In view of the possibility that the U.S. Government might take legislative action for the establishment of a programme in the field of health care it was felt to be important that the United States Public Health Service should have complete information on this subject, and with aid from the International Health Division two senior members of the staff of the Surgeon General of the Public Health Service were sent to Western Europe for three months to observe the operation of health insurance systems in the United Kingdom, France, Switzerland, Denmark, and Holland.

A long account is given of "Group Health Insurance Incorporated," a non-profit organization in New York, providing doctors' services on a prepayment basis, and of the establishment of a health insurance plan for Greater New York. The governing body of this latter includes representatives of medicine, labour, city government, social welfare, and business. The services afforded include general medical, specialist, surgical, and obstetrical care at the home, consulting room, or hospital, diagnostic procedure, periodical health examinations, preventive measures, and various therapeutic services. All persons employed in New York City earning a basic wage of not more than 5,000 dollars are eligible for membership, which covers their dependants. Employer and employee share the cost. It is estimated that 25 full-time doctors are required for 20,000 insured persons, this making it possible for each doctor to furnish the needed service without haste in a 2,000-hour working year. The fee of 19.20 dollars per insured person is expected to yield an average net income of about 10,000 dollars a year for a full-time doctor, but the remuneration is left to the decision of each medical group. The medical group includes a balanced number of general practitioners and specialists in various fields, assisted by qualified technical personnel. When this report was issued 444 doctors, organized into 20 groups, were ready to begin service, and about 5,000 unattached doctors had expressed a desire to affiliate with the groups.

Finally, the report gives an account of 119 International Health Division Fellowships in 24 countries in the year under review.

A HUNTERIAN CELEBRATION

Austerity conditions compelled the Hunterian Society to substitute an informal evening party for the usual dinner in celebration of the birth of John Hunter. Mr. A. E. Roche, the president, who, with Mrs. Roche, received the guests, mentioned that there was some doubt about the exact date of Hunter's birth. Hunter himself gave it as St. Valentine's day, but the register of the Lanarkshire parish in which he was born gave it as Feb. 13; probably the truth is, as the late Stephen Paget suggested, that he was born on the night of Feb. 13–14, 1722. Mr. Roche permitted himself an Irishism when he said that had Hunter lived to-day he would probably not have been born at all. He was the youngest of ten children, and families of ten in these days are hard to find. Mr. Roche speculated on the likely impressions of John Hunter on attending a cocktail party in his honour 150 years after his death. Until the temperance of his later life he was accustomed to drink his bottle, and Mr. Roche suggested that his reaction to the strange concoctions apparently necessary to modern social intercourse would be expressed by one of his favourite sayings: "Don't think; try it." Another matter for speculation was how Hunter would have approached some of the medical problems of to-day. He did not mince his words, and in a letter to his brother William he spoke of some with whom he was associated as "no more fit for their office than the devil to reign in heaven." In the right spirit of a clinician he regarded the earning of a living as an unfortunate if necessary distraction from his researches. "Well," he said, "I must go and earn this damned guinea, or I shall be sure to want it to-morrow."

In honour of the occasion the Society brought forth its Hunterian treasures, which are under the jealous guardianship of Mr. C. R. Rudolf, the Society's librarian, at 60, Wimpole Street. All the objects shown were the property of the Society with two interesting exceptions, namely, a charming miniature of William Hunter, done in 1783, the year of his death, by John Boyle, miniaturist, and a shagreen case containing various small articles which belonged to and were used by John Hunter. These are the possessions of Dr. T. B. Jobson, whose son, Dr. Patrick Hunter Jobson, an honorary fellow of the Society, was present as representing the Hunter family. Dr. Patrick Jobson is a descendant, through his mother, from Matthew

Baillie, nephew of Hunter. Other articles of interest were watches, balances, a pair of spectacles with silver rims, some brass dispensing instruments, and a walking-stick (the ivory handle lost in the blitz), all of which had belonged to John Hunter. One large repeater watch was described as having been presented to Hunter by the staff of St. George's, presumably before the quarrels, and on the back of the inner case were the words: "Left to my friend Charles J. Fox, 1793." There is no contemporary record of Hunter's friendship with Fox, but Hunter was one of Fox's constituents in Westminster, and the statesman was a governor of St. George's.

Among the books and manuscripts on view were letters from William Clift, Hunter's last assistant, from William Cullen, and from Matthew Baillie. The collected works of John Hunter, in four volumes, published in 1835, were included, also the first edition of Hunter's work on venereal disease, dated 1786, notes of lectures by both John and William, and a French translation, published at Ostend in 1799, of Hunter's work on blood, inflammation, and gunshot wounds (there is no record of another copy of this work in England or America). Of hardly less interest were the volumes containing the minutes of the Society itself from its inception in 1819 to the present time. Successive secretaries have seasoned the minutes with wit and humour, and the reading of the minutes is still one of the most interesting items of a Hunterian evening. The first volume, recording the proceedings to 1827, incorporates the Society's rules, one of which lays it down that physicians, surgeons, and apothecaries actually in practice and persons of distinguished talents in other sciences connected with medicine are eligible for ordinary membership. Another tradition of the Society is to hold its ordinary meetings within the boundaries of the City of London—occasionally at the Mansion House or in the hall of one of the City companies, but most frequently from the very beginning in a tavern. But on this social occasion the Society came to the West End, to within 200 yards of St. George's Hospital, to drink to "The Immortal Memory."

Preparations and Appliances

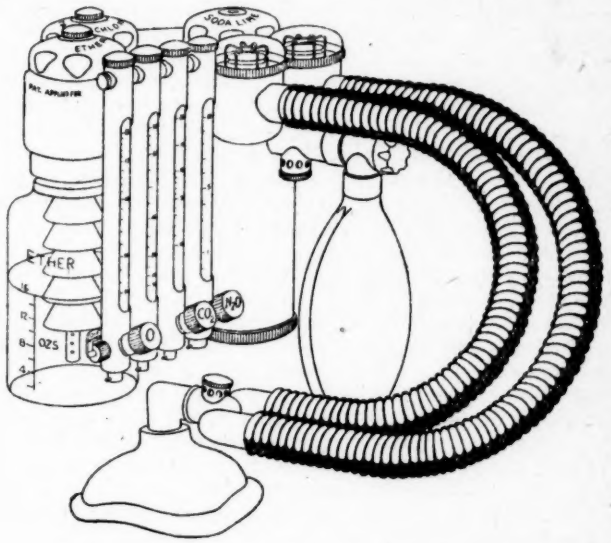
A NEW GENERAL ANAESTHETIC APPARATUS

Dr. H. REX MARRETT, visiting anaesthetist, Coventry and Warwickshire Hospital, writes: In designing this new machine I have tried to satisfy the requirements of the occasional and specialist anaesthetist, and to make it suitable for use in hospitals and private practice. This new apparatus embodies in unitary structure a soda-lime absorber, ether and chloroform vaporizers, a rebreathing reservoir, and flowmeters for the admission of basal gases. Its height is 9½ in. (24 cm.), width 8¾ in. (22 cm.), depth 8 in. (20 cm.). It weighs only 9½ lb. (4.3 kg.), and can either be supported by the extended tube from a cylinder stand or be fixed by means of a simple bracket to any existing hospital anaesthetic table. The three proportioning valves over the ether, chloroform, and soda-lime are of leak-proof design. All ports and passageways through which the patient breathes are such that resistance to respiration is minimal. The apparatus is gas-tight at a pressure of at least 12 cm. of water. A simple automatic locking device to safeguard the patient from possible decomposition of "trilene" has been designed whereby the trilene control cannot be rotated when the soda-lime is in the circuit. Similarly the soda-lime cannot be brought into the circuit if the trilene control is not in the "off" position.

The illustration shows the front view of the machine with the flowmeters, bag, and directional valves readily visible in one field of vision. The flowmeters and bag can be illuminated by a new flame-proof torch fixed to the central support for use in a darkened theatre. The bank of flowmeters can comprise any desired number of tubes as each has been made a separate unit. A very compact type of bayonet-catch non-interchangeable connexion is employed. These connexions are inserted into the base on the under surface.

A one-gallon bag is used instead of a concertina type reservoir, because I consider the former has two major advantages: First, inspiratory and expiratory movements can be more easily observed however full the bag may be; secondly, pressure variations during manipulations in controlled respiration can be more easily appreciated. The bag mount is secured to the head by a taper joint with a bayonet catch. A control is situated on the end of the bag mount, and this can be turned in one direction to close the bag gradually for insufflation, and in the other to open progressively an air-inlet aperture whilst closing the bag at the same time for partial rebreathing and the draw-over principle.

The outer canister of the absorber is fixed to the head and is provided with a thread at the lower end on to which the base is



screwed. To this base the inner canister is fixed by means of a rustless spring. This arrangement enables the anaesthetist to remove the absorber with one hand in one operation. Both the inspired and the exhaled breath pass through the soda-lime.

Rotation of the ether control to the mid-point between the "off" and "on" positions regulates only the patient's breath entering the bottle via the cone. Further rotation of the control towards the "on" position regulates the additional admission of basal gases to the vaporizer via a central perforated tube. With the closed circuit only the inspirations pass through the vaporizer, but with the semi-open circuit both inspirations and expirations contact the ether. The basal gases alone vaporize the chloroform or trilene. The control above the absorber is graduated for partial absorption.

I have had the full co-operation of the manufacturers, Airmed, Ltd., 20–24, Park Way, Camden Town, N.W.1, in arriving at the final design of this apparatus.

The first International Poliomyelitis Conference will be held at the Waldorf-Astoria Hotel, New York, on July 12 to 17, under the auspices of the National Foundation for Infantile Paralysis. Dr Hart E. van Riper, Medical Director of the National Federation for Infantile Paralysis, will preside over the conference. Invitations have been sent to more than sixty nations for official delegates to attend the conference and present papers. We are informed that Prof. H. J. Seddon, of the Wingfield-Morris Orthopaedic Hospital, Oxford, will participate. In addition some twenty other medical and scientific authorities outside the U.S.A. will send delegates. The delegates will be divided into 3 categories: (1) official government delegates; (2) institutional delegates representing universities and societies; (3) member delegates, which category includes physicians and other duly qualified scientific and professional people. Dr. van Riper has said that the collection of local epidemiological and immunological data from all parts of the world and their correlation have never been accomplished on the necessary scale before; it is intended that the conference should serve to expedite distribution of vital knowledge on a world-wide basis. The plenary sessions will be preceded by the opening meeting, to be presided over by Prof. Irvin Abell, of Louisville University. Dr. Basil O'Connor, President of the National Foundation, will welcome delegates, and foreign delegates will be introduced by Dr. Morris Fishbein, editor of the *Journal of the American Medical Association*.

Reports of Societies

SWINE ERYSIPELAS INFECTION IN MAN AND ANIMALS

A meeting of the Section of Comparative Medicine of the Royal Society of Medicine was held on Feb. 18, when the subject for discussion was swine erysipelas infection (*Erysipelothrix rhusiopathiae*) in man and animals.

Veterinary Problems

Mr. A. W. GLEDHILL said that this disease of pigs was almost world-wide, though it varied in seriousness from country to country and even from region to region. In Britain its prevalence had been most marked in East Anglia. Susceptibility to infection was not confined to pigs and the disease occurred commonly in birds of most species. The organism was also a common cause of arthritis in lambs, and it had been described as causing endocarditis in horses. There was a good deal of evidence to indicate that it might lead a saprophytic existence. In areas where the disease appeared subclinical infections were common. Pigs between the ages of three months and one year were most susceptible. No doubt sucking-pigs received protective antibodies from the sow, and pigs over one year might have acquired sufficient immunity to resist infection. Lowered host resistance might play a dominant part in determining the conditions necessary for the onset of a severe outbreak. There were three forms of swine erysipelas: mild, acute septicaemic, and chronic. Immune serum acted by neutralizing the toxic effect of the organisms rather than by promoting their destruction. As curative agents the sulphonamides were not of value; the organism was sensitive to penicillin *in vitro*, and to a less extent to streptomycin.

Human Infections

Dr. MARY BARBER, of the British Postgraduate Medical School, gave a survey of the history and literature of infection in man. Compared with swine, she said, man was relatively immune to infection with this organism. Three types of human infection occurred, namely, cutaneous, intestinal, and generalized. The first was by far the commonest, and to this she devoted most of her remarks. A case of cutaneous infection of this nature was described in the *British Medical Journal* as long ago as 1870. It was the case of a foreman in a sheepskin bootshop on whose hands lesions developed; the recurrence of the disease was ultimately prevented by the wearing of gloves. [This patient, a man aged 28, was in the care of Dr. Tilbury Fox at University College Hospital, who described the case in our issue of Feb. 5, 1870, at page 132.] In 1873 a worker at St. Bartholomew's Hospital reported 16 cases of a similar condition, in several of which the lesion appeared to have originated in a scratch from a bone while handling meat. The disease was established as a clinical entity in the late 'eighties, and its causal relation with swine erysipelas was worked out. The condition was met with fairly frequently in a large skin clinic. Infection occurred mainly by accidental transmission among those who were brought into contact with pig infection, such as cooks, kitchen workers, and butchers, also among people who handled fish. Nearly always there was a history of injury. The period of incubation was from one to five days. The disease was confined almost exclusively to the hands, rarely spreading above the wrist, but there were a few cases in which the lesion was on the soles of the feet or on the face or neck. The patient complained of burning, itching, and pain. The lesions were of a purple-red colour, with definite margins. Glandular enlargement was very rare, and suppuration was never recorded. Fever and constitutional symptoms were slight and transitory. The lesions might disappear spontaneously without desquamation, but recurrence was not infrequent.

Serum had been the usual method of treatment, but serum sickness was very commonly produced and was more trying than the infection itself. Sulphonamides had been used with doubtful effect, though there were reports of cure. A few cases had been treated with penicillin, and she thought there was evidence that this had some effect. In one case, within two days of starting treatment with penicillin there was almost nothing to be seen on the hand.

Dr. Barber showed figures illustrating the experiences of various investigators and also described some cases of generalized infection. One of these was a case of septicaemia associated with endocarditis. The patient died a month after admission to hospital, the whole course of the disease having lasted four months. At necropsy the heart size was found to be nearly twice normal, and vegetations adhered to the anterior cusp of the mitral valve. One case was recorded in which infection was *via* the alimentary tract. In this case the patient developed malaise, anorexia, and fever, with the eruption of red spots on the trunk and limbs, later a painful swelling of the knee-joint and severe anaemia and leucopenia. He improved after the administration of immune serum but relapsed and died; no post-mortem examination was carried out.

Effectiveness of Chemotherapy

Mr. MALCOLM WOODBINE, of the Wellcome Laboratories, Beckenham, reported some observations on the effectiveness of the new chemotherapeutic agent upon *Erysipelothrix rhusiopathiae* infections in mice. The now substantial literature on the ineffectiveness of sulphonamide compounds owing to their mode of action, as in the case of sulphathiazole, sulphadiazine, sulphapyrazine, sulphanilylguanidine, phthalylsulphathiazole, and sulphetrone, had been confirmed *in vitro* and *in vivo*, but it was of interest to note that "marfanil," or benzylamine-4-sulphonamide, which owed its activity to a different mechanism, was active *in vitro*.

Results with penicillin indicated that very large doses were necessary. The optimal dose was 1,000 units twice daily per mouse (20 g.) for ten days or more, and this might be compared with the total dosage of the order of 30 units per 20-g. mouse for complete protection in streptococcal, staphylococcal, and pneumococcal infections. The necessity of parenteral administration of relatively large doses appeared to preclude the use of penicillin in swine erysipelas. Recent work in the United States, in which turkeys had been used and doses of 20,000 units once daily over four days had been given, showed a reduction of mortality from 100% in controls to 10%. Pigeons had been cured with penicillin, and the use of penicillin successfully in man had been recorded not only by Dr. Barber and her colleagues (1946), but by Hodgson (1945), Jenning (1946), and Stiles (1947).

The reported activity of streptomycin *in vitro* against this organism encouraged the laboratories at Beckenham to examine this antibiotic when supplies became available. Streptomycin was active *in vitro* and *in vivo* in mice, but less active than penicillin weight for weight. There was, however, a synergic action in mouse infections when penicillin and streptomycin were administered together in equal doses, and this might be of some potential value. Aerosporin showed little activity *in vitro* and no activity at all in infections in mice. The related antibiotic polymyxin was reported to be inactive *in vitro*. It appeared that a still more effective chemotherapeutic agent, suitable for oral administration, was required, particularly in the veterinary field.

In some further discussion a veterinary surgeon said that fatal cases in man were very rare, but a case came under his notice in Colombo, in a laboratory assistant, whose illness was first described as malaria, from which he had previously suffered. But it did not respond to quinine, and he became steadily worse. The symptoms were intermittent fever, weakness, and loss of weight. Typhoid, brucellosis, and malaria were excluded. The patient died, and at necropsy nothing characteristic was found except some enlargement of the spleen, from which, however, the organism was cultured.

Dr. BARBER said that in describing man as relatively immune she meant that it was rare to see the disease in a severe form. The lesions were slight and healed up quickly, so that the cases did not come into the hands of the bacteriologist.

The PRESIDENT said that swine erysipelas had always been a serious problem in veterinary medicine. Before the war a good deal of vaccination was done, and up to a point was satisfactory. During the war, with the decline in pig population, the disease tended to die out, but with the building up of herds there might

be a recrudescence. He wondered whether the susceptibility of man to this disease might not be much higher than was commonly thought.

CLINICAL PATHOLOGY

LETTSOMIAN LECTURE

The first of three Lettsomian Lectures on "Clinical Pathology in Relation to Medical Practice" was delivered by Dr. CUTHBERT E. DUKES before the Medical Society of London on Feb. 16. The President of the Society, Mr. W. E. TANNER, was in the chair.

Dr. Dukes began by saying that one reason why clinical pathology deserved consideration at the present time was because of the intention of the Health Service Act to extend laboratory facilities to the whole of the community. Up to the present, in most districts, only hospital patients had enjoyed the benefit of a free comprehensive service. Now the door of the laboratory was to be opened to all—a prospect which the clinical pathologist might regard with some satisfaction not unmixed with apprehension. Increased facilities for clinical pathology would be welcomed by the profession, especially by general practitioners, but a service of this sort could not be started in a few weeks. Laboratories had to be built and equipped, and pathologists and technicians had to be trained.

Definition

Clinical pathology might be defined as the application of pathology and pathological method in clinical practice. Much of the diagnosis and treatment of disease had come to depend on team work, and an essential member of the team was the pathologist. The mastery of laboratory technique was neither easily nor quickly acquired, and it was in order to meet the need for co-ordination between clinical medicine and laboratory science that the clinical pathologist was evolved. The difference between academic and clinical pathology was no greater than between pure and applied chemistry or pure and applied mathematics. Academic pathology was a pure science, clinical pathology the application of science to the diagnosis and treatment of disease in the individual patient.

The development of clinical pathology in the past had gone through three phases. When hospitals first recognized the need for a pathological department it was usual for the physician with a liking for the microscope or for chemistry to be asked to "look after" pathology. The next phase of development was for the post of pathologist to be regarded as a stepping stone to the staff. The third stage, the result of the rapid extension of the subject during the last twenty or thirty years, was that in universities and medical schools the pathologists continued to specialize still further, thereby creating difficulties in the application of pathology to clinical medicine. A single pathological specimen sent to a departmentalized laboratory tended to be passed from one department to another. This piecemeal analysis, though occasionally necessary in obscure cases, was not desirable in the ordinary case. A specimen such as cerebrospinal fluid should be examined as a whole by a pathologist who understood something of the clinical side of the case.

In the smaller provincial hospitals the evolution of clinical pathology proceeded along different lines. Many curious devices were adopted by some voluntary hospitals to raise funds for laboratories. Some turned themselves into trading concerns and offered to examine all specimens sent in by general practitioners. Pathology had often been described as a science ancillary to medicine, but some pathologists came to think of themselves not as handmaids but as household drudges. Until recently very few facilities existed outside the hospitals. Diagnostic laboratories established by public health authorities, research institutions, and commercial firms catered only for certain sections. One of the defects of National Health Insurance was the lack of facilities for clinical pathology. The Act made provision for any drug, remedy, or therapeutic agent to be prescribed by the insurance practitioner, but it did not enable him to find out whether the agent prescribed was really needed. In pernicious anaemia he was allowed to prescribe liver extract, but he had no facilities for taking blood counts.

To-day and To-morrow

In the Emergency Medical Service in 1939 provision was at once made for laboratory diagnosis and clinical pathology as an integral part of wartime hospital organization. At the moment facilities for pathological services varied greatly in different parts of the country, and pathologists themselves were scattered about in a haphazard fashion. The survey recently undertaken by the Ministry of Health drew attention to the unequal distribution of facilities for pathological tests and to lack of co-ordination and failure to make use of the facilities which existed.

It was difficult to foresee how clinical pathology would develop in the future. The only certain thing about the future, as Lord Keynes said, was that it would be different from the past. Plans were in preparation for a considerable extension of hospital and public health laboratory work, but were handicapped by shortage of personnel and equipment. On the appointed day hospital pathological laboratories would come under the control of the Regional Hospital Boards. It was not yet clear how the hospital services would be co-ordinated with those at present organized separately by the public health services. The investigation and control of epidemics was obviously the task of the public health epidemiologist, but the diagnosis in the case of an individual patient might depend on tests carried out by a hospital pathologist. It was anticipated that in the future the public health service would provide free diagnostic facilities for all infectious diseases, together with central reference laboratories. It remained to be seen whether it would be best to run the two services separately or in combination.

The efficiency of the pathological services provided under the new Act would depend largely on the supply of well-trained clinical pathologists, and on the spirit in which they did their work. Up to the present clinical pathologists holding teaching appointments or attached to voluntary hospitals had enjoyed a large measure of independence. They had been answerable to committees or governing bodies, but these had very seldom interfered with arrangements made for running the laboratories. Under the new Act the pathologist might not enjoy as much freedom as in the past, but he hoped to gain other advantages in return. They would all have to be on their guard lest the new control resulted in a shifting of attention from the patient to some other objective. The art of managing and manipulating other people had now been carried to an extraordinary level of efficiency, but the more they exercised social control over their fellows the more they tended to lose sight of the real needs of the individual.

Training the Clinical Pathologist

The clinical pathologist should be well trained clinically as well as technically. It had been recommended by the Consulting Pathologists Group of the B.M.A. that future entrants should not be recognized as specialists in clinical pathology until after five years' postgraduate experience and the attainment of a higher qualification, and that no assistant should be admitted to the staff of a department of clinical pathology until he or she had done at least one year in a house appointment. The sound way of acquiring training was in a general hospital under a good all-round clinical pathologist. In universities and colleges where specialization had led to the formation of a number of separate departments there was a tendency for the budding pathologist to bud out too luxuriously in one direction to the detriment of others.

Certain personal characteristics were necessary for success in any profession. For the clinical pathologist one of the most important qualifications was the capacity for working with other people, especially medical and surgical colleagues, fellow pathologists, and laboratory technicians. Team work was essential for good clinical pathology. Next in importance was a capacity to direct the activities of others. The chief pathologist in a laboratory was not unlike the conductor of an orchestra. Ideally the conductor should be able to play every instrument; but that was too much to ask, and all that was essential was that he should know each instrument's capabilities and limitations. So with the pathologist and the various laboratory procedures.

It was often erroneously assumed that personal relationships were of less importance in pathology than in other branches of medicine. The extent to which a pathologist entered into any sort of personal relationship with patients varied greatly according to the nature of his work, but whether he met the patient personally or only a bit of the patient, the existence of the patient as a living individual must never be overlooked. Their patients were not the objects but the subjects of their skill. The public in general adopted a foolish attitude to pathologists, just as they did to all scientists. Patients either took the view that nothing of value would come from the pathologist's activities, or else they looked with childlike faith upon laboratory mysteries as their only hope.

The personal relationship of the pathologist and the laboratory technicians affected the working of the laboratory much more than an outsider might suppose. The whole atmosphere of the laboratory might easily be poisoned by one discontented assistant. Trained laboratory assistants should always be made to feel that they were in responsible positions.

Finally, with regard to the relationship of the pathologist to his professional colleagues, doctors in general differed to a remarkable degree in their attitude to pathological services and in the confidence they reposed in a pathologist's report. Some referred to the laboratory as if it were an inspired oracle; others suppressed all laboratory emanations as irrelevant or misleading. The great majority resorted to the laboratory only for an occasional Wassermann or pregnancy test. It would be a disaster, of course, if laboratory tests led to the neglect of the clinical examination. They should be regarded not as a substitute for but only as an extension of the clinical findings.

THE FILMSTRIP IN MEDICAL TEACHING

A joint meeting of the Royal Society of Medicine and the Scientific Film Association was held, under the chairmanship of Mr. ZACHARY COPE, on Feb. 12 to discuss medical filmstrips. A filmstrip is a length of cine film on which a series of pictures is printed in a desired sequence and projected on a screen, very much in the same way as a series of lantern slides. The pictures may be reproductions of printed material, such as illustrations or book text, original drawings or paintings, and, of course, photographs and radiographs.

Dr. R. M. TATTERSALL said that on seeing filmstrip for the first time a year ago he was so impressed by its possibilities in medical teaching that he set to work at the medical school at Leeds to apply it to instruction in such techniques as lumbar puncture, the taking of the blood sedimentation rate, catheterization, and other simple procedures. In making the filmstrips they endeavoured to be as elementary and detailed as possible, the first frame, perhaps, reproducing the initial request for the procedure, and the last of the thirty or more the written-up case-notes. They had no special department of medical photography at Leeds, but one of the registrars had a Leica camera, and with this the negatives had been obtained, the processing being given out to a trade house. The magazine capacity of the Leica imposed the limitation of about 34 frames in one strip. In deciding on what was to be shown it had to be borne in mind that no two people carried out, for example, lumbar puncture in exactly the same way. Therefore the filmstrips were produced on a committee basis, three or four people sitting down together, arguing out their differences, and agreeing on the points to be emphasized in the successive pictures. Title and captions were also decided, and, in addition to the photographs in sequence of the actual procedure, charts, diagrams, pictures of the instruments to be used, and illustrations from anatomical specimens might be included. One or more frames might be used to remind the student pictorially of the importance of observing absolute cleanliness. The last few frames of the strip might illustrate the labelling of the specimen bottles, the completion of the case-notes, and perhaps the medical uses of the procedure. At least five people were required for the making of the filmstrip, namely, the member of the staff who carried out the procedure on the patient, the photographer, someone to attend to the lighting arrangements, someone else to follow what in cinematograph parlance was called the script, and finally the patient himself, who must be co-operative. It was as well to have a rehearsal. In projecting the filmstrip it was first taken slowly through the lantern, then quickly to give the illusion of continuity to the photographs of the actual procedure. A group of students should first be shown the filmstrip, then see the actual procedure, and after that they should observe the filmstrip again.

Dr. BRIAN STANFORD reminded the meeting that 35-mm. film was inflammable, whereas 16-mm. substandard film was safe for projection in places not specially protected. A positive filmstrip could be made straight from the camera by reversal, but that was not to be recommended; it was better to make negatives and print from them. If diagrams only were wanted they could be drawn in white ink on black paper, photographed and developed, and projected on the screen as black on white, and this was perfectly satisfactory for many purposes but of course was applicable only to line drawings or printed matter.

Various technical points were brought out in further discussion, such as density, tone range, and screen brightness. It was stated that the average cost of a filmstrip was about 12s. 6d. At the close of the meeting a number of filmstrips illustrating medical subjects were shown.

THE LESSONS OF WAR SURGERY

At a meeting of the Manchester Medical Society on Feb. 4 Sir HENEAGE OGILVIE read a paper on "The Lessons of the War for Civil Surgery."

During the recent war much was learned about transport, organization of forward surgery, segregation of special cases, and methods of wound treatment applicable only to the forces of a victorious alliance in the concluding stages of a campaign. The outstanding problems of war surgery throughout the ages were those of shock and infection. These problems had not been solved, but their treatment had been brought to a very satisfactory level, the first by the elaboration of methods of storing blood and plasma and the organization of a resuscitation service, the second by chemotherapy. The same methods were available in civil practice, and would be applied so much the better if the simple outlook and sharp distinction between theory and practice that characterized Service units in the field were translated to the treatment of industrial accidents. The general lessons of wound treatment, excision, drainage, two-stage closure, and, later, of skin cover all had their civil applications.

In addition to progress in the treatment of these fundamental problems of trauma, the level of surgical technique advanced to a remarkable extent, aided by the development of resuscitation and chemotherapy, but above all by the parallel advances in anaesthesia. The most striking example of technical advance was the change from the conservative attitude of war surgeons towards chest wounds in 1941 to the radical thoracic surgery of 1945. The freedom of the open thorax was the outstanding new feature in post-war surgery. Whereas formerly only extrapleural approaches to the heart were considered, and little was undertaken beyond embolectomy and pericardiolysis, to-day incisions were chosen to give the most direct approach to the chamber or vessel concerned. Removal of the lung or oesophagus, daring feats before the war, was now undertaken every week. Total gastrectomy by the abdominal route was a difficult and dangerous operation; now the trans-diaphragmatic approach had made the operation reasonably straightforward. The war surgery of head injuries and vascular lesions had also left its legacy of advance to the planned surgery of peace.

In more general terms, war brought to all Service surgeons periods of rest and opportunities for discussion in which many traditional ideas were weighed and found wanting. In particular the principles of rest and rehabilitation had been radically revised for the good of surgery and the surgical patient.

The fifth dinner meeting of the 1948 session of the Chelsea Clinical Society was held on Feb. 10 at the South Kensington Hotel, with the president, Dr. Neil Maclay, in the chair. There was a large attendance of members and visitors to hear a discussion on "Some Difficulties in the Science of Crime Detection" opened by Dr. Keith Simpson. The discussion was continued by Dr. Donald Teare, Mr. A. Le Mesurier, Dr. Sundell, Mr. Ivor Back, Dr. MacManus, and Dr. Clive Shields.

Correspondence

The Commonplace Mind

SIR,—Any one of us who seeks to grasp first things first amidst the clamour of voices contending on the merits of the National Health Act, and to preserve his equanimity under the buzz of curtain lectures, prosy and splenetic, which *The Times* newspaper presumes to give us, may well feel that we are in danger of concentrating unduly upon details and of omitting a general diagnosis of the situation which confronts our profession.

Details our negotiators had perforce to attend to, but those of us who have not been thus thanklessly engaged are at leisure to take a more general view and to look beyond the apparently hostile figure of the Minister of Health, who is after all an ephemeral phenomenon, to the state of affairs of which he is symptomatic. What does this import in our disturbed society? I think the Spanish writer Ortega y Gasset sums up the situation in his well-known book *The Revolt of the Masses* with a harsh candour we shall do well to ponder. He says:

"The characteristic of the hour is that the commonplace mind, knowing itself to be commonplace, has the assurance to proclaim the rights of the commonplace and to impose them wherever it will. . . . The mass crushes beneath it everything that is different, everything that is excellent, qualified and select. Anybody who is not like everybody, who does not think like everybody, runs the risk of being eliminated. And it is clear, of course, that this 'everybody' is not 'everybody.' 'Everybody' was normally the complex unity of the mass and the divergent specialized minorities. Nowadays, 'everybody' is the mass alone. Here we have the formidable fact of our times, described without any concealment of the brutality of its features."

Where, indeed, could we look for a more manifest expression of the coarse ferocity of the power of mere numbers when challenged than in the speech of the Minister of Health in last week's Commons debate, or in the proposal to abolish the university representation in Parliament? What good, in the Greek sense of that word, can the community hope for from government carried on in such a spirit? Do men gather figs of thistles?

There are, I believe, qualities of rare excellence in our profession, though like every human institution it has its imperfections. I submit that this excellence and an unworthy envy of it are the basis of much of the odium to which we are now being subjected in the hope of bending us and our profession to the ends of a retrograde political ideology. We should be too guileless to deserve to survive as a free profession serving the State *through the community* if we supposed that the nationalization of medicine is the pure expression of a burning and altruistic desire to see a wider measure of social justice, or that the forces now mustered against us are anything but levelling and intellectually and morally destructive in their essence under whatever sophistries and platitudes they hide themselves.

It is, I believe, now given to our profession to have the place of honour and to stand in the gate against ruthless and levelling forces that will, if not resisted in time, crush yet other excellences than ours and make the word "democracy" as nauseating and as compact of cynical falsehood in Western as it is in Eastern Europe. This is the real issue before us.—I am, etc.,

London, W.1. F. M. R. WALSHE.

Cable from A.M.A.

The officers and Board of Trustees of the American Medical Association meeting in Chicago congratulate the British Medical profession, with the leadership of the officers and Council of the British Medical Association, on the overwhelming approval of its firm stand on behalf of professional integrity, medical ideals, and the right to care for the sick without political domination.—E. L. HENDERSON, M.D., Chairman, Board of Trustees, American Medical Association.

Debate on the Act

SIR,—Mr. Butler was in a difficult position in the House of Commons in putting forward an amendment to the National Health Service Act, which a Coalition Government had originally sponsored and which is, actually, very little different from the present one. In spite of this I feel that, if the Opposition could do no better than they did in Monday's debate, they will be in opposition for a very long time.

The arguments which were put forward against the Act and which are the arguments put forward by the B.M.A., although important from our point of view, mean little or nothing to Members of Parliament or to the lay public and are difficulties which could easily have been got over by any other Minister of Health. The doctors have complained that they have a bad press, and this is little to be wondered at, because the average member of the public has no idea what the trouble is between the B.M.A. and the Minister.

The real reason why I am saying "No" personally and probably why the majority of doctors are saying "No" is that the Government are about to take a large sum of money each week out of every member of the public for a service which they know, and which we know, cannot possibly be fulfilled on July 5 of this year. The public have been definitely promised a service of general practitioners and specialists working reasonable hours in well-equipped health centres and hospitals, and that every person in the country should have the services of a general practitioner and, if necessary, of specialists whenever he requires them.

We know that building has not started on a single health centre or on a single 500-bedded hospital as yet for this Service which is to start in four months' time. When the public do not get what they expect it is the doctors who will have the blame and not the Government.

It has also been said that this controversy between the B.M.A. and the Government is not financial, and Mr. Butler said that the general-practitioner terms were generous. Any doctor who has studied these terms and has any business acumen at all knows that they are far from generous for the general practitioner, and it is not possible to offer any opinion on the terms for specialists, which, we understand, are to be made known about six months after they have joined the Service.

I give below the reasons why I think most doctors are saying "No," first from a general practitioner's and secondly from a specialist's point of view:

The General Practitioner.—(1) The general practitioner is asked to sign a contract for a 24-hour day seven days a week and 365 days a year with no provision for holidays or for illness. This is not the comprehensive health service which the supporters of the Act have put before the public, where the doctor was to have plenty of leisure, time for postgraduate study, and proper holidays.

(2) No provision is made for any secretarial assistance for the doctor, but it must all be done by his wife or his domestic servant, if he has one. The terms of remuneration do not allow for the payment of a secretary, and if they did it would be necessary for the doctor to have two secretaries, as I am sure no secretary could be asked to work 24 hours a day, particularly in view of the large masses of forms and certificates which will be added to the doctor's burden. The modern domestic servant is not usually capable of taking a correct telephone message, and so it is the doctor's wife who will suffer, and I am afraid the only remedy is polygamy.

(3) The remuneration is quite inadequate. A well-qualified practitioner in a good-class area can only earn £1,000 a year gross, as it is impossible with this type of patient living in a scattered area to look after more than 1,000 patients properly. In a poor-class area a doctor may be able to earn £3,000 or even £4,000 a year, provided always that he does not examine his patients.

The Specialist.—(1) The public have been told that under the new Service they will all get attention in well-equipped hospitals. So far from any attempt to build and equip any new hospitals, the Minister has refused to allow many existing hospitals to make extensions and improvements which were held up owing to the war and which they were quite prepared to do out of their own funds.

(2) No attempt has been made to increase the number of nurses, but the training of new nurses has, on the other hand, been curtailed by the Minister's condemnation of the smaller hospitals.

(3) It is impossible to discuss the question of remuneration, as this is not known until six months after the Service starts, and this is bound to deter even the most trusting.

(4) There is no compensation for the goodwill of specialists' practices. While the goodwill of practices in the Harley Street area may not be a saleable asset, it is on the other hand a very valuable asset in the country, and many provincial specialists have paid large sums for their present practices.

I am sure if these few facts were put clearly before the public they would agree that the Minister should postpone the intro-

duction of his comprehensive Health Service until : (*a*) he has built his health centres ; (*b*) he has built and equipped his new hospitals ; (*c*) he has trained a sufficient number of new doctors at the expense of the State to bring the number of doctors up to the necessary amount to give this service, which means trebling the present number of doctors ; (*d*) he has trained a sufficient number of nurses to equip his new hospitals, for at present there are not enough nurses to staff the hospitals already in existence.

The Minister of Health, who is also the Minister of Housing, knows better than I do how long it will take to build and equip his hospitals and health centres, but I should say it would probably take at least as long as it will take to train his new State doctors, and that is about eight years.—I am, etc.,

Camberley, Hants. LESLIE HARTLEY.

Freedom Based on Ownership

SIR,—The many references to the buying and selling of practices show much confused thinking—that the custom is not "ethical," that "patients are bought and sold" (*vide* Mr. Bevan), etc. The new Act aims at doing away with it altogether. It is essential that we medical practitioners should realize what that means. When advertisements appear of practices for sale the words used are merely sale-room jargon and are not descriptive of the transaction. What is really being sold is an annual income derived from the practice of medicine. Should a doctor's income be divorced from the work he does ? In a perfect world with perfect doctors this might be true, but as things are there is no measure of a doctor's value except the amount and quality of the work he does, and it appears logical that his income should be related to that work—hence the essential rightness of the capitation fee.

When the Act comes into force it is intended that all medical practices will be bought by the State. We will then be no longer owners but renters. We become tenant doctors ; we will belong to the army of the dispossessed. But there will be a big difference between a doctor tenant and a property tenant. The tenant of a property (house or farm, etc.) has three freedoms which the doctor tenant will not possess. He can leave the property with due notice ; he can force a negligent owner to fulfil his promises (in the agreement of tenancy) ; he can acquire another property anywhere and a different owner more agreeable to himself. The doctor tenant will have lost all these: he cannot force the Minister to fulfil his promises ; he cannot go where he wishes ; he cannot leave his tenancy without permission, and he will have the *same owner* to deal with wherever he goes.

Freedom based on ownership is a valuable one, and to be deprived of it means serious restrictions to individual initiative and aspirations. The medical profession more than any other calling is based on individuality both in doctor–patient relationship and in medical achievement. To limit individual freedom even slightly is retrogression ; to limit it so seriously as by dispossession is a disaster. Behind the dispute between Bevan and the profession, between Socialism and freedom, is the basic question, Does the State serve the individual or the individual the State ? If the latter is our belief then we should join up with Bevan and accept his thirty pieces of silver.—I am, etc.,

Exeter. J. FAYLE SEALE.

Ownership of Goodwill

SIR,—The argument that the custom of selling and buying practices exists only in this country ought to be viewed in relation to the fact that the panel system also operates in this country only. The difference is very essential, and its analysis may be helpful in finding a solution out of the present deadlock. In Germany, for example—and this, I believe, applies to other countries as well—a voucher, valid for a limited period only, is issued to the insured person each time he wants to consult a doctor. The name of one doctor is entered into the voucher, which is the basis for the remuneration of the doctor. Nothing substantial and comparable to a panel could therefore be passed on from a doctor to his successor. With the panel system as basis for medical aid the smooth working of a scheme would be seriously endangered if a panel would have to be dissolved each time a doctor ceases to be professionally active. This would bring unnecessary difficulties and problems to the public and foster an undesirable competitive spirit among the doctors.

Could not, instead, a scheme be devised which regulates and controls the passing of a panel from one doctor to another and safeguards the interests of all parties concerned—the public, the doctors, and the administration ? The problem of the young doctor could, within such a comprehensive scheme, be solved more satisfactorily than with an insufficient initial salary. I have observed elsewhere very undesirable forms of propaganda in efforts to secure an initial basis for professional activities.—I am, etc.,

Wrexham, Denbighshire. RUDOLF NUSSBAUM.

Young Doctors

SIR,—During all the arguments and exhortations of the last few weeks the younger doctors have had a certain amount of criticism levelled at them. Several recent statements are nonsense. The older men (and women) say we have the same chances as they had. In theory they sound convincing ; in practice they overlook the difficulties in obtaining houses and cars, and do not really know how high the cost of living is. One such person was sure I ought to be able to support a wife and run a flat and a car on £300 per year "for a year or two until things pick up." They say we are pro-Bevan. Those of us who spent the best years of our lives in the Services have had enough of direction and regulations. I do not include those whose Service numbers have not yet had time to dry. Of course there seem to be some idiots who think that on the appointed day they will be presented with a house, equipment, instruments, and transport, and a list of patients. Most of the younger doctors have a fair idea of what is going on, and would rather remain as they are than be slaves. The wisest of us have either left the country or are busy packing our bags.—I am, etc.,

Billingham, Co. Durham. J. S. CLARK.

Suggested Compromise

SIR,—The Parliamentary debate has not clarified the issue for the general public and was an attempt to weaken the support of the rank and file of the profession for the B.M.A. leadership. We must improve our general publicity work in the Press. The man in the street thinks we are having a fight with Bevan about terms of service, and to him we seem to be an obstinate mercenary lot, whereas the issue at stake is "freedom." That word should be blazoned across all our headlines. Our leaders have been guilty of a misuse of words.

The buying and selling of practices is not a "principle" at stake. It is a method by which we have been free to move about the country and to save for our old age. If the State will help us with a pension for our old age, there surely need be no financial transaction when a practice changes hands ? So that our leaders can safely give way on that issue (in which both Conservatives and Socialists seem to agree), as long as a less cumbersome method than at present suggested in the Act is arranged to permit freedom of movement in the profession.

To safeguard a general practitioner's freedom of work we must continue to oppose the basic salary that may lead to a full-time salaried service. But why be so insistent upon the right of appeal to the courts ? If it is right to sack a bad workman why should not a bad professional man suffer the same penalty ?—and he would be very bad before such a drastic step would be taken by his local committee. We have never had a right of appeal from the decisions of the G.M.C., but the B.M.A. leaders have made little effort to alter this, and it has not affected the daily lives of most of us.

If the Minister compromises by clarifying the partnership agreement clause, and removes the basic salary, we must meet him half-way, even though the present Minister has an unpleasant personality and methods, by giving way on the other two points. He must also keep his promise about implementing the Spens Committee report. If we are not willing to compromise, not only will the public misunderstand but the B.M.A. leaders will lose the support of the many waverers in the profession, who, in spite of the plebiscite result, may swing over before July 5. We must not have a repetition of the debacle that followed the passing of the Lloyd George Act.—We are, etc.,

A. S. HATCH.
F. H. HUNNARD.

London, S.E.21.

Practice under N.H.S.

SIR,—We have not yet been informed what measures have been taken to ensure that patients will sign on with their chosen doctors on or before July 5. All panel practitioners know from experience that most panel patients do not present their medical cards for signing until they require treatment, and it is no unusual occurrence to find a patient who has had his card for three, four, or even five years before handing it to his doctor. We must realize at once the absolute necessity of preventing this happening in the new Service, as the sole means of livelihood of the majority of doctors will be the N.H.S. cheque, for our private patients, who since the commencement of the N.H.I. have subsidized the panel, will have all been absorbed into the N.H.S. We will have virtually to commence building up a panel again from scratch, and to build up to 3,000 or 4,000 will take several years unless some form of compulsory registration is adopted by the Ministry. The doctors cannot do this, as the G.M.C. would regard it as canvassing, and quite rightly so. We cannot accept a scheme under which there is no guarantee that our income from the commencement is going to be not less than at present, as our expenses will not be correspondingly reduced in the interim.

There is no reason why our present panel should not be transferred to our list in the new Service as from July 5, giving us a nucleus on which to build our new list and also to make sure of a small cheque on Jan. 1 to meet practice expenses, as I presume that all cards accepted between July 5 and Sept. 30 will be the basis of the fees paid on Jan. 1, 1949. During the October to December quarter we will be expected to live and run our practice on our savings, even although during the previous quarter we have been attending and have had the responsibility for the welfare of all our potential patients, including our private patients whose fees have all these years subsidized the panel. Unless more attention is given to this matter we are going to work for three months absolutely, and for some years partially, for Mr. Bevan and love. What a thrilling prospect!

Having argued about all the ethical and idealistic aspects for months let us now get down to the materialistic and bread-and-butter side of the business and get an immediate understanding on this matter, remembering that every labourer is worthy of his hire, even if he is only a general practitioner.—I am, etc.,

Wetherby, Yorks. S. T. PYBUS.

Inducement to Good Work

SIR,—The principal argument against the N.H.S. which has been advanced by the dental profession is the inevitable lowering of the standard of work by the introduction of cheap mass-production methods. The same argument applies to the general practitioners, and it is a point that has been entirely neglected by the B.M.A. The N.H.S. seeks to perpetuate the worst features of the panel system.

No inducement exists for the G.P. to take higher degrees or to interest himself in any particular branch of medicine, and no contribution is made towards the provision of efficient apparatus or surgery accommodation. Payment depends entirely upon quantity rather than quality, and the doctor whose main article of equipment is a pack of visiting cards by means of which every case presenting difficulty is referred to the local hospital is to be paid at the same rate as the doctor who is prepared to spend time, trouble, and skill in curing his patients. Are we all to be converted into drudges with vast visiting lists and overflowing surgeries, but whose examinations become more and more perfunctory and whose treatment is confined to the scribbling of prescriptions?

In this district the voluntary hospitals are staffed by G.P.s, and thanks to the facilities provided for good work and to the association with consultants and fellow practitioners the standard of medicine is very high. The provision of hospital beds acts as a continued postgraduate course, and all consultants are agreed that the G.P.s who are so fortunate as to be attached to such hospitals gain very considerably in efficiency and experience. Under the N.H.S. it appears likely that such hospitals will disappear or be put to other purposes.

Little inducement appears to exist for the G.P. to do good work, and his main function would seem to be that of a medical clerk occupied in filling in certificates. At present it is claimed with justification that we have the best medical profession in the world. What are we likely to have in the future?—I am, etc.,

Kingston-on-Thames. A. C. RILEY.

The Independence Fund

SIR,—There are three comments I would like to make. (1) The lay public do not know that if the modifications proposed by the B.M.A. were adopted they would still have "free" doctoring with everything "laid on," with the difference that their doctor would also be free to treat them as he thought best and to support them in matters of dispute. I feel that more publicity could well be given to this essential aspect. (2) The B.M.A. has been criticized for having no alternative scheme to the Act. I have understood that the B.M.A. would support the Act if it were altered in regard to the four cardinal points which mean freedom. If this is so, can we have a positive assurance on this point? (3) It is essential that we, and the younger practitioners in particular, should have a definite statement as to how the fighting fund is to be administered. If it is not sufficient I am sure that many, including myself, would gladly increase their guarantees.—I am, etc.,

Sunbury-on-Thames. J. MURRAY SCOTT.

Tell the Public

SIR,—I feel confident that I shall be found to have correctly anticipated the result of the plebiscite when I say that the features which make the present Health Act generally unacceptable are by now sufficiently appreciated by the profession—and for this our thanks and congratulations are due to the Chairman and Council of the B.M.A.—but we all know, by the bemused utterances of both friends and patients, that the position is by no means so clearly understood by the general public. Nor should we expect that the finer details should ever be as clearly understood by the general number. My gross impression is that the public trusts the doctors; but if we are to gain their active support in the second stage of the campaign, as we must, there is one fact that I believe it is absolutely crucial should be forced home to them immediately, repeatedly, with the utmost vigour, and by every means of publicity available (Parliament, Press, public speaking, and private discussions—and not forgetting, I hope, if at all possible, those two best methods of all, screen and the B.B.C.)—namely, that the profession is not, and never has been, averse to a comprehensive health service; but, on the contrary, positively and wholeheartedly does want, and has wanted, a comprehensive health service just as much as, and for far longer than, the present Government has wanted it. In short, that the medical profession is determined that the public shall have available to them a comprehensive health service, and that there need be no doubt on that matter whatsoever.

I agree wholly with the correspondent, Dr. E. Cronin Lowe (Feb. 14, p. 310), who suggests an "alternative scheme which the profession could and would unanimously operate to the advantage and satisfaction of all those of the community who desire to avail themselves of such a National Health Service," and that "such an alternative scheme should be published as soon as possible, discussed, advertised, and if necessary voted upon before July"; and partly with Dr. R. A. Murray Scott (p. 310) when he considered it a great opportunity lost that we were not already presented with an alternative scheme to vote for at the time of the plebiscite. On both matters there is no time to be wasted.—I am, etc.,

London, S.W.10. P. N. WALKER-TAYLOR.

SIR,—I discussed our problems this morning with a well-known broadcaster and journalist, and he considered that we had neglected our "public relations," with the result that most people did not realize why we oppose the present Act.

He suggested that we should arrange a series of radio talks and debates; and I am sure a radio discussion in "Friday Forum," the speakers including Dr. Hill, Dr. Guy Dain, Dr. Somerville Hastings, and a member of the M.P.U., would have a very large listening audience and help us considerably in bringing our views before the public.—I am, etc.,

Woburn, Beds. WARREN A. BARNES.

League of Doctors' Wives

SIR,—Such is the consternation among doctor's wives who realize the large part they will have to play in the new comprehensive health service which comes in on July 5 that it has been decided to form a League of Doctors' Wives under the presidency of Mrs. Leslie Hartley. Mrs. E. J. C. Bockett, Mrs. J. O. M. Rees, Mrs. K. J. L. Scott, and Mrs. J. Wilson have agreed to form a committee. The object of the League is the protection of the doctor's wife and her home.

The comprehensive Health Service has been forced on the public because the present system is described as inadequate, and particularly so the accommodation for patients in the doctor's private house. This Service was to be run from fully equipped health centres with full nursing and secretarial services. In actual fact no health centres have been built, and the doctor's wife is to act as nurse-secretary-receptionist for her husband for 24 hours a day. Her home is to be occupied by patients at all hours. The terms offered to general practitioners will not allow for the expense of a surgery away from his private house, with the necessary clerical staff. The doctor's wife will be supported by all housewives when she states that in these days, when domestic help is practically unobtainable, she has a whole-time job in looking after her home and her husband and, most important of all, her children. The League insists that the Minister shall provide the health centres and the staff first.

All doctors' wives are invited to join the League. The subscription is 5s. and should be sent to me at the address below. Will any doctor's wife who is willing to act as hon. secretary in her district please notify me when sending her subscription?—I am, etc.,

Petherton, Park Road, Camberley, Surrey

PHYLLIS SQUIRES,
Secretary, League of Doctors' Wives

The Doctor's Wife

SIR,—There is one point which Mr. Bevan has deemed so unimportant in his present scheme for State-controlled medicine that he has not even mentioned it, but in actual fact it is a vitally important point in the working of his scheme. Where exactly do the doctors' wives come in this scheme?—and with them I include all those very efficient housekeepers who look after the homes of bachelor doctors. Without our aid and willing co-operation the scheme cannot work for 24 hours.

In the past we have kept our homes cleaned each day after 40 to 50 people have walked across our floors; we have answered telephones and front-door bells until we have been ready to drop. If we have had no help we have been unable to leave our houses for five minutes while we ran to fetch the bread. We have never known the freedom and joy of banging our front doors and going for a walk with our families, or away for a day's outing with them. The same has applied to holidays. Our homes have had to be kept open, and we have had to stay behind ourselves, or make elaborate arrangements for someone to look after the messages, bells, and a locum at tremendous expense. We may only visit our friends if we leave a message as to where we are, the telephone number, and what time we expect to be back. If our friends are not on the telephone we are denied the pleasure of visiting them. All these, and many, many more points too numerous to mention here, of which the lay public know nothing, we have done willingly and cheerfully in the past because it was for our husband's good name and the goodwill of his practice. But neither his good name nor the goodwill of his practice means a thing to Mr. Bevan in his present scheme.

If our homes are to be turned into State-controlled offices, what does Mr. Bevan suggest? He cannot take away the advantages of our practices without taking away all the disadvantages too. We all know that every Government office or department has its cleaners, secretaries, and typists. Is Mr. Bevan going to provide all these free to the doctors' wives? No wife of a Civil Servant is expected to work for the Government for the same salary as her husband.

Mr. Bevan must be made to realize that with our help and co-operation (adequately paid) his present scheme might work: without us his scheme cannot.—I am, etc.,

Ashton-on-Ribble, Preston.

DOROTHY GUYER.

SIR,—Why has no meeting of doctors' wives been called to ask their opinion of the coming service? At the present time, in spite of our onerous duties of housewives and mothers, we are always ready to answer telephone calls and door bells at any time of the day and night, and to listen to the patients' troubles in the midst of our own troubles, and even to rush out at any time to try and contact our husbands on their rounds if they are wanted for urgent cases. We are up early in the morning to have the surgeries and waiting rooms clean for our husbands' patients. We cannot leave our houses unattended in case calls come.

Would we be expected to give the same cheerful and willing service to the State as we give for love of our husbands and the prestige of the practice? The reply may be that in some distant future the State hopes to provide clinics for the Service. This will be long after the present generation of general practitioners' wives have passed their usefulness or are able to appreciate this fairy tale of the future. So surely our opinion should be canvassed. Even the wife of the shift-worker knows at what time of the day or even night to expect him back: we do not have this consolation, and even have put out a hot meal for our husband when he has suddenly to leave this untouched and rush out to a case. No paid servant of the State could provide as efficient a service to the general public, or would be willing to make so many sacrifices in their service. This is not a State soulless service, and cannot be bought.

Why are we constantly told that the doctors will not refuse service if their conditions are not met? The present Minister has no conscience or gentlemanly feelings in his dealings with the doctors, and the best way is surely to use similar methods. Public opinion would no more be affected by this than by the Minister's misrepresentation of the medical man's case.—I am, etc.,

A DOCTOR'S WIFE.

Legal Implications of Clause 35

SIR,—It has become, in my opinion, a matter of paramount importance to general practitioners to consider the implications of Clause 35, which is now commonly designated the Penal Clause. Mr. Bevan, opening the debate on the National Health Service on Monday, Feb. 9, moved the following:

> That this House . . . is satisfied that the conditions under which all the professions concerned are invited to participate are generous and fully in accord with their traditional freedom and dignity.

Let me examine Clause 35 in the light of the above statement. The provisions of this section are both difficult to understand and very complicated. It prohibits the subsequent sale of the goodwill or any part of the goodwill of the medical practice of a doctor whose name is, on the appointed day or at any time thereafter, entered on the list of those undertaking to provide general medical services under the Act.

The serious feature of this Clause is that the buying and selling of the goodwill, which it is made unlawful to sell, constitutes a criminal offence which is punishable on conviction on indictment to a fine not exceeding: (*a*) such amount as will in the opinion of the court secure that he derives no benefit from the offence; and (*b*) the further amount of five hundred pounds; or to imprisonment for a term not exceeding three months, or to both such fine and such imprisonment.

Viscount Maugham, a former Lord Chancellor, in moving an amendment to this iniquitous clause on Oct. 28, 1946, stated that he could "well understand that some of the subsections of that clause are, to a layman, quite unintelligible. . . . But what I am left to endeavour to achieve is my desire that new crimes, whether for doctors or others, should not be invented by Acts of Parliament in this year of our Lord, unless it is perfectly plain that the person who is going to be accused of the crime knows that he is doing something wrong and is accordingly what lawyers call *mens rea*, that is, of guilty mind, which according to our law applies to nearly every conceivable crime to be found on the statute book. For some reason or other, which I do not understand, Clause 35 seems to be framed with the deliberate determination to depart from that principle" (*Hansard*, House of Lords, Vol. 143, No. 139).

Goodwill is an indefinable and intangible asset which is very often a matter of opinion in the mind of an accountant. Issues regarding the question of goodwill, law of property, law of trusts, and the law of partnership have always been decided by the Chancery Division of the High Court, presided over by judges with particular legal acumen and experience regarding the rules of equity. An

individual, if aggrieved by any decision, has the right of appeal to the Court of Appeal and to the House of Lords. By Clause 35 these civil matters relating to the practice of a doctor will be transferred, after the appointed day in July, 1948, to a lower criminal court presided over by a bench of lay magistrates or by a stipendiary magistrate, who will have to decide issues which, in my opinion, they will not be competent to decide.

Although a prosecution for an offence under Section 35 can only be instituted by or with the consent of the Director of Public Prosecutions, the position is intolerable, as many innocent or unwitting transgressors may find themselves the victims of criminal proceedings. Doctors will be in jeopardy if after the appointed day they seek to honour their existing partnership agreements. A conflict may arise between a decision of a High Court judge, who may for example decree specific performance of a deed, and the decision of a criminal court in proceedings instituted at a later date under this burdensome section. Under Subsections (6) (*b*) and (8) it may well be that a son who succeeds his father may be precluded from giving any financial support to his father or mother both before and after he succeeds to the practice. Under Subsection (3) a doctor's widow or children may be involved unwittingly in criminal proceedings as the result of the sale of a house to another doctor. This encroachment by the executive on the liberty of doctors and *their personal representatives* is unjust.

The Minister has promised to set up a legal committee to inquire into the effect of the Act upon partnership agreements only. From what I have stated above the effect of the Act on partnership agreements is only a small issue, and it is obvious that unless Section 35 is deleted or amended the profession will be involved in a morass of litigation through no fault of its own.

Mr. Bevan stated in the course of the debate that "as a general rule when Parliament passes a Bill and it becomes law, it is left for the courts to construe it." The protagonists of the Act assert that it is now on the Statute Book as law and that we should loyally accept its provisions. If after the Act comes into operation it is found that the courts, *at our expense*, construe certain sections in our favour, amending legislation can then be introduced. This form of argument is nonsensical. If an Act of the legislature is unworkable in whole or in part then the obvious just action to take is to amend the unworkable sections before the Act comes into force and great injustice is done to individuals.

There are several precedents which support my argument. I quote one where an Act which was found unworkable was in fact amended twice. I refer to the Law of Property Act. A Law of Property Act was passed in 1922 to come into operation on Jan. 1, 1925. The lawyers examining it closely found that it was unworkable and that the result of its operation would be chaotic. This was followed by the Law of Property (Amendment) Act, 1924, which had as one of its objects "to correct errors and supply omissions in the Act of 1922." A further Law of Property Act was passed in 1925 to come into operation on Jan. 1, 1926. Even then further amending Acts were passed in 1926, 1929, and 1932 "in order to remove certain difficulties that arose in practice when the Statutes came into force" (*Cheshire on Real Property*).

While I appreciate that legislation is the vehicle by means of which the executive enforces policy, yet in my submission "the law should be the master of policy and not be the medium whereby the Government enforces an unjust policy infringing the two most precious things in life—justice and liberty." I quote from the Earl of Chatham's speech on the Wilkes case in the House of Lords, Jan. 9, 1770: "We all know what the Constitution is. We all know that the first principle of it is that the subject shall not be governed by the *arbitrium* of any one man or body of men (less than the whole Legislature), but by certain laws, to which he has virtually given his consent, which are open to him to examine, which are not beyond his ability to understand." The powers given to the Minister in the Act give him this *arbitrium* and therefore violate the spirit of the Constitution. It makes no difference to me whether it is 1770 or 1948; the principles of English law are the same.

I would stress another very important implication of the Penal Clause which offends the rule of law. If a doctor is convicted under this section, the General Medical Council may erase his name from the *Register* merely on proof of the conviction, and the doctor may not go behind the conviction and try to show that he should have been acquitted by the criminal court. The Council may erase without "due inquiry" in a criminal conviction. The doctor is therefore placed in peril twice for the same offence and runs the risk of two penalties for the same offence. This is an intolerable burden to place upon a general practitioner.

It would be an act of great statesmanship if Clause 35 was deleted or very materially amended. To remove the penal sanctions from this section and to substitute for them the equitable remedies of the civil courts is surely not beyond the wisdom of the law officers of the Crown. The profession will otherwise become the unwitting instrument of an attempt by the legislature to introduce a new and disturbing element into the laws of this country whereby the equitable jurisdiction of the Chancery Division of the High Court is considerably restricted and replaced in a great measure by the jurisdiction of a criminal court, and new crimes may be committed by a doctor and his personal representatives of which they need not have a *mens rea* or guilty mind.—I am, etc.,

London, W.8. J. ARTHUR GORSKY.

Freedom to Publish

SIR,—The gloomy forebodings of your editorial note to my letter on freedom of publication (Feb. 14, p. 312) are contradicted in the same issue at p. 325. Mr. Bevan, in fact, answered that "there never was any doubt whatsoever" that "a doctor would be able to write and publish in scientific journals what he liked without any prohibition whatever." This wording obviously implies that medico-political and medical administrative matters would also be a matter for free controversy in the medical press.—I am, etc.,

London, N.21. E. MONTUSCHI.

*** This topic is referred to in an annotation at p. 399 of this issue.—ED., *B.M.J.*

Advertisements for Administrative Officers

SIR,—I have been very concerned by the frequent advertisements for an Assistant Senior Medical Officer to various Regional Boards. The senior referred to is the Senior Administrative Medical Officer. By the suppression of the word administrative the inference is that the doctor appointed will assist the "Senior Medical Officer."

At the discussion with the Ministry officials the Negotiating Committee was expressly informed that no title—to use the official's own words—"suggesting that he was in any way head boy" would be used for this administrative, yet our own journal is helping to establish the undesirable inference that there is a Senior Medical Officer in the Region. If the title must be condensed I suggest that the title Assistant Administrative Medical Officer is more suitable, even if it contains eight more letters.—I am, etc.,

Hove, Sussex. H. J. MCCURRICH.

Liberty of Patient

SIR,—Amidst all the dust and fury of the present battle I have not observed that the true interests of the patient, in particular his capacity to develop as a whole person, receive much consideration. Social security and Beveridge plans and other methods for controlling and supposedly safeguarding the citizen must inevitably bring with them restrictions on his capacity to develop. If this is a political opinion it is also a medical one with an ethical aspect.

Is it not true that if you give a man something you take something away from him also? The citizen who receives his doctoring or his children's schooling through some obscure method of taxation cannot possibly feel the same pride in his responsibilities as one who pays in more obvious and direct fashion. We know that the word "free" is bandied about as part of the political humbug associated with democracy and other forms of government, but it is surprising that psychologists have paid so little attention to the cramping and thwarting of personality inherent in the massive schemes of the planners. Their activities in interfering with people's lives are loudly acclaimed, even by their potential victims. If there is no need to think, no need to develop foresight or initiative, no need to do more than be born, to breed, and to die, what scope is left for the fashioning of fully developed individuals?

Not long ago I asked three youths between the ages of 17 and 25 the yearly total for a daily outlay of 2s. Not one could tell me, despite State education and much help. They never thought beyond the week because they never had to. They were not called upon to save to pay for the term's schooling or to develop any kind of foresight. It was all done for them. One does not know whether to be angry or sorry. But there is a good deal to be said against schemes described as part of social welfare which deprive people of the necessity of thinking ahead and doing their own planning for a rainy day. What do the psychologists think?—I am, etc.,

Barnet, Herts. G. C. PETHER.

Free Choice of Doctor

SIR,—May I crave the hospitality of your columns to ventilate a point I was unable to thrash out owing to limited time at a recent meeting of the Cornwall Division? I asked Dr. D. P. Stevenson; "Has the question of the patient's right to contract out from the Service been dropped, and, if so, why? If we object, as rightly we do object, to being placed under the thumb of a dictator, are we not laying ourselves open to a charge of hypocrisy if at the same time we acquiesce in our patients' being subjected to totalitarian regimentation?" Dr. Stevenson's reply was to the effect that the question was difficult, because of the patient's contribution of some 5s. towards the State insurance only 10d. actually went to the medical service. This seems to me to amount to acquiescence in the State insurance, excusing the medical proportion of it as did the errant servant girl on the grounds that "it was only a little one."

Qui s'excuse s'accuse. Surely, Sir, the point at issue is not the question of saving the patient 10d. a week (or even 10s. as it could be made at the whim of the Minister without power of redress by the patient) but the patient's freedom of choice of doctor. The effect of the State insurance (the invention of Bismarck, who described it as a golden chain around the necks of the workers) is to compel every patient to accept and act upon (whether he approves of it or not) the advice of a State doctor subject to directives from Whitehall. Is this "free choice of doctor"?

I hold no brief for homoeopathy, nature cure, osteopathy, etc., as such, but I do most vehemently uphold the right of any patient to be free to choose a doctor practising those cults if he wishes to do so. What is the negation of this right but totalitarian regimentation?—I am, etc.,

St. Germans, Cornwall. W. H. SPOOR.

Freedom in a State Service

SIR,—Mr. Bevan asks us to enter the National Health Service and try to make it work. He even offers to alter the Act, in due course, as parts of it are found to be unworkable. These are surely "honeyed" words to entice a proportion of the profession who are wavering to accept service, and are the spearhead of the war of nerves upon which he is now embarking.

We have seen in the last few days the supreme example of what can happen to a person employed in a State service who dares to write to the Press and state a frank opinion. Air Vice-Marshal Bennett (one of our leading aviators of the day, with 20 years' experience behind him) criticizes the Minister under whom he serves, and finds himself dismissed—not because of incompetence but for an expression of opinion. Surely this is a precedent which should convince everyone that once they become servants of the State they are no longer to be allowed freedom of speech. They are not to be judged by the work they do, however efficient, but by their qualities as "Yes" men. Let this incident of Air Vice-Marshal Bennett serve as a warning to us all and harden our resolve to unite against this bad National Health Act of 1946 until the omnipotence of the Minister is curtailed.—I am, etc.,

Sheffield. R. A. TREVETHICK.

Pound Value and Compensation

SIR,—We have seen recently in France a devaluation of the franc, resulting in an immediate loss of purchasing power of 50%. If a similar devaluation of the pound should occur after our compensation for loss of goodwill had been fixed it would mean in effect an immediate loss of 50% of our compensation. If goodwill were retained, on the other hand, its value in terms of pounds would be doubled. Is this a very remote danger? I wish I could think so. I have a strong feeling that a saleable asset is of much greater value than a hypothetical future payment of a fixed sum in sterling.—I am, etc.,

Sherborne, Dorset. RICHMOND MCINTOSH.

Dismissal from Service

SIR,—I wish to protest against your publication (without comment) of the letters of Dr. J. Leigh Cox (Jan. 31, p. 221) and Dr. J. Lennel Taylor (p. 222). The former said of the Minister that "he will decide whether a doctor shall or shall not be retained in the Service," while Dr. Taylor criticized "a service from which the Minister of Health may dismiss them (the doctors) with no such right of appeal." You, Sir, must know that these statements are untrue, and I would have thought it more helpful to doctors in trying to come to a decision if you had added your own footnote or, alternatively, had refrained from publishing the letters. It is quite clear from the Act that the Minister can only intervene *in favour* of a doctor whose dismissal has already been recommended by others. May I anticipate some of your more hasty readers by saying that I am not objecting to free speech, for this should not include the monotonous repetition of untruths.—I am, etc.,

London, N.22. E. J. SAMUEL.

*** Dr. Samuel misses the point that the ultimate authority is the Minister of Health. This is what he said in his reply to the Negotiating Committee (*Suppt.*, Dec. 20, 1947, p. 154): "Parliament have accepted the view, embodied in the Act, that as the ultimate responsibility for the service is placed by Parliament on the Minister, it must be left to him to decide in the last resort whether it is possible for him to retain in the public service in any particular area, or even at all, a practitioner whose retention, in the Tribunal's view, 'would be prejudicial to the efficiency of the service' . . . It would be impossible to combine this responsibility [i.e. for the new service] with any lack of ultimate jurisdiction as to the nature and quality of the service provided."—ED., *B.M.J.*

Defiance of Dictatorship

SIR,—It is 35 years since I laid down the pen I had wielded in your columns in support of our own N.H.I. scheme, ashamed of our pusillanimous surrender to Lloyd George's threatening fist, nor have I since felt any interest in medical policy. But I have been moved to write a letter which appears in the *Scotsman* (Feb. 11) to put a little courage into the hearts of my friends, because I feel that not only is the outlook for success brighter than it was in 1912–13, but our action now is of importance far transcending that of 1912. It may prove to be the turning-point in our internal political history—the first successful defiance of a dictatorial Parliament that robs us of freedom and justice. I urge all medical men to think what is their duty not only to the art of medicine and the physical welfare of the nation but to its spiritual health, and act on principle, not on expediency or personal benefit.—I am, etc.,

Edinburgh. HARRY GREY.

The Fight for Freedom

SIR,—I called at a garage for petrol, and while they were ticking off the coupons the boss came and talked about Monday's debate in the House of Commons on the National Health Service Act. "It's up to you doctors now," he said; "if you fail now the fight for freedom in England is lost." My own thoughts had been running on much the same lines, and his remark struck a bell so loudly that it has echoed in my head all day.

It is a useful, and often sobering, mental exercise to try and project one's mind into the future, say 100 years ahead, and then look back at the happenings of to-day and try to picture them as part of the pageant of history. Some eight years ago a great Englishman told us that we were entering upon our "finest hour"; and at his words Britannia threw off the last vestiges of middle-aged somnolence and stood erect, rejuvenated. Who can doubt that the verdict of history will uphold Mr. Churchill's estimate?

But what will it say of this age? War-worn and exhausted, England has slumped into a strange phase of apathy, docility, readiness to be regimented—strange indeed, for these are the characteristics of the Germans—almost incredible (the historian will say) of the British, whose solid claim to greatness rests upon a thousand years of sturdy independence and individualism. Yet there it is, explain it who can. Years of personal self-abnegation in the national cause have led us to forget that each man is master of his own fate. Little by little we Britons are bowing our necks to the encroachments of bureaucracy, allowing our wrists and ankles to be bound with silken threads. Each thread is so thin and delicate as to be barely noticed, but you can immobilize an elephant with silk

threads (or even pink tape) provided that we have enough silk and that the elephant is asleep or drugged.

Will England awake in time from her stupor? The danger is less obvious than in 1940, but it is likewise deadly, and our England that has given the world so much is rather elderly and very tired. She may slip into sleep as the aged do so easily, or she may swallow some neatly disguised narcotic, and wake to find her freedom gone. Was my friend right this morning? Is it up to the doctors to take up the challenge of those that seek to tamper with freedom? Will the historians date the reversal of Britain's unnatural trend to this year of grace when the united medical profession, impervious to abuse and misrepresentation, dared to say an absolute "No" to the threats and blandishments of politicians. Our ancient profession bears an enormous responsibility, but it is used to that. Perhaps this is its finest hour.—I am, etc.,

Orpington, Kent. A. C. E. BREACH.

Northern Ireland Act

SIR,—I see very little correspondence about the Irish Health Service Act in the *Journal*, which is streets ahead of the British Act, with plenty of room for voluntary effort. The Act at first rather closely resembled the English Act, but a lot of hammering out in committee and by direct negotiation of the friendliest type and about 400 amendments have been effected. Much hard work and thought have been put into the Act, and it should work very well, for the Ulster doctors are pleased with it and will show every readiness to co-operate with the Ministry for Health and the Government, who have shown themselves to be reasonable and ready to compromise for the common good. This too could have been done in England had Mr. Bevan only been less headstrong and stubborn. He is getting nowhere except deeper and deeper into the mire, and the profession is rapidly getting out of the "slough of despond."—I am, etc.,

Bournemouth. S. ALEXANDER MONTGOMERY.

Retired G.P. Comments

SIR,—May a retired G.P. express an opinion?

Surgeons should be paid a salary for hospital and operative work according to their experience, technical judgment, and ability—not easy but possible. All good surgeons hate fee-snatching and its loathsome necessity.

Physicians should treat their patients as individuals and not as robots in a State-controlled economy. This is the foundation of the doctor–patient relationship and a psychological necessity.

Midwifery is a matter for unerring skill, patience, and decision. Responsibility must lie with one doctor and with one doctor only. A long apprenticeship should be served. Apprentices should be numerous.

Gynaecologists: (1) operative—see *Surgeons*; (2) consultative—see *Physicians*.

Psychologists, if State-controlled and paid by the State, should be confined to gaol as dangerous to the patient. Their approach should be absolutely unbiased—and they know it.

Concentration on the supply of accommodation in hospitals and adequate staffing is a paramount and urgent necessity, and all connected with the medical profession know that it can be done but that political considerations are hindering and delaying progress. Payment is a minor consideration. With inflation or deflation all standards will collapse. Cut the cackle.—I am, etc.,

Oxford. A. W. D. COVENTON.

Mutual Consent

SIR,—It is by the toil of the doctors that this service must be carried on. Unless care is taken confusion, frustration, and discontent are going to be created, and the doctors, however willing to give harmonious co-operation, will be the target of the people's anger, because everyone will blame them for attempting an impossible task. We must show the people by a united demonstration that we wish to produce a constructive health scheme, but this can only be done bit by bit. The time is ripe for a big expansion on the principles of the National Health Insurance Act, but definitely designed for health and not only for the treatment of disease.

Real health (physical, mental, and spiritual) can only exist where free will for all has full play, subject to the limits of social needs. Flexibility and variety of choice are essential for this. Administration may be a bit more difficult but more interesting and allow for progress, not stagnation. Some of the millions which were going to be spent should be used for hopeful experiment and to assist young men to set up in practice. Progress in healing means a deeper adjustment to the wants of human nature. To lay foundations we must all give and take. Politicians must realize that they may sometimes be mistaken. No one must make party capital out of the situation, and all political pressure such as the undemocratic demand for everyone to join on July 5 on pain of losing their claim to compensation should be withdrawn. This demand is significant of the pressure which a Government can put on, and seriously interferes with the free choice of many doctors. The ideal would be to work out a scheme by mutual consent, freely given, of both government and medical profession. Is this impossible for such a great object?—I am, etc.,

Letchworth, Herts NORMAN MACFADYEN

Pressure Points

SIR,—I gather that some medical men have already been approached by individuals on their panels inquiring whether they are opposing the Health Service Act or contemplating refusal to serve under the scheme, because if so they propose to change their doctor. It seems possible that this sort of impudence may increase a good deal during the next few months on the principle that every little bit of extra pressure helps to tilt the scale. May I suggest that the best way to deal with it is to write to the clerk of the local insurance committee forthwith asking him to remove the offender from one's list, and to inform the latter that one is doing so.—I am, etc.,

Portsmouth E. W. DEWEY

Secret Ballot

SIR,—In your issue of Feb. 14 (p. 326) you report Dr. S Jeger's question in the House of Commons. The Minister is asked whether he knew the B.M.A. plebiscite required doctors to disclose their identity on the ballot papers and whether this violation of voting secrecy, interpreted by many doctors as an attempt at intimidation, would justify him in seeking a more accurate expression of medical opinion.

Surely Dr. Jeger realizes that when he casts his vote at a General Election he discloses his identity to the poll clerk, that the voting paper handed to him is numbered, that the number corresponds to the number on the counterfoil whereon particulars of his identity are recorded, and that precautions of this kind are necessary to protect the ballot from any sort of chicanery, impersonation, and the like. Is there any difference in principle between this and the B.M.A. plebiscite? Of all the charges levelled against the B.M.A. that of intimidation is the most ridiculous.—I am, etc.,

Keighley. H. M. HOLT

SIR,—On Feb. 5 Dr. Jeger asked the Minister of Health whether he knew that in the plebiscite of doctors held by the B.M.A. each doctor was required to disclose his identity on the ballot paper; and whether, in view of the fact that many doctors interpreted this violation of voting secrecy as an attempt to intimidate individual doctors, he would take steps to get a more accurate expression of the opinion of doctors on the question of their co-operation in the new National Health Service.

I should like to say that when I recorded my vote on the ballot paper I had not the slightest feeling that the B.M.A. or any of my medical confrères here would resort to intimidation as a result of my vote. I felt in precisely the same matter-of-fact state of mind as I feel when I fill in and sign a voting paper sent to me at election times by my university. In this plebiscite I am confident that no official of the B.M.A. knows how I voted, neither do my medical confrères in this locality. The fact that I believe our local vote was unanimous is beside the point.—I am, etc.,

Lancing, Sussex. CHARLES E. S. HARRIS.

Mr. Bevan Confuted

SIR,—Two years ago, in the early spring of 1946, I attended a meeting of practitioners of the Birmingham area at the Queen Elizabeth Hospital; there were about 600 present, and Dr. Dain was in the chair. I painted a picture of the political career of Aneurin Bevan, and I put forward a resolution worded thus, "That in the opinion of this meeting negotiations with the present Minister of Health are not possible." Dr. Dain was on his feet immediately; he remonstrated with me for proposing this, and he pointed out that if this resolution was carried it would embarrass him and other members of the Negotiating Committee who were on the platform. He moved that we pass on to the next business, and this was done. I am not writing this to prove how right I was in 1946 but because I feel very strongly that Dr. Dain's action that night gives the lie to the accusations that the Minister made about the B.M.A. "clique" in the Commons on Feb. 9.—I am, etc.,

Dudley, Worcs. L. H. G. MOORE.

No Certification

SIR,—May I endorse the suggestion put forward by correspondents in your issue of Feb. 7 that in the event of a majority against entering the Service in its present form we do not wait for the appointed day but take immediate action by refusal of certification? Such action would bring matters to a head and necessitate amendment of the Act before the appointed day. This would nullify the Minister's main weapon—that of refusing compensation to doctors refusing to enter the Service.—I am, etc.,

Edinburgh. G. S. M. WILSON.

SIR,—I agree with the various correspondents who have written to the *Journal* recently expressing the opinion that action should be taken at once before the National Health scheme becomes operative in July. I suggest that the Association should organize a scheme for the non-issue of medical certificates commencing, say, in April rather than leave the matter until concerted action may be too late. I understand that many doctors are in agreement with some such policy and only require a lead from some organization such as you represent.—I am, etc.,

Dartford, Kent. F. S. D. THOMPSON.

Test of Death

SIR,—The interesting phenomenon of segmentation or "railway truck" appearance of the blood column visible in the retinal vessels occurs when the blood flow is sufficiently reduced either in death, on account of the absence of the cardiac impulse, or in obstruction of the retinal artery from various causes. In the latter type of case the condition is temporary. This segmentation was noted by Bouchut in 1874—possibly before then—and has been reported several times since (Kahn, 1913; Salisbury and Melvin, 1936), often as a new observation. Presumably the same process occurs in other parts of the body under similar conditions.—I am, etc.,

Edinburgh. H. M. TRAQUAIR.

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Salisbury, C. R., and Melvin, G. S. (1936). *British Medical Journal*, **1**, 1249.

SIR,—Under this title Dr. E. A. Harris (Jan. 31, p. 226) describes a condition of segmentation of the blood column in the retinal vessels after death and says he is not aware that the sign had been described.

Probably the most complete account of this condition was given by C. H. Usher, of Aberdeen, in the *Ophthalmological Review* (1896, vol. 15, p. 339), where observations on the appearance of the retinal vessels in man, monkey, cat, and rabbit, just before, at, and just after death, are fully detailed.

A brief history of the subject is given also by E. Wolff and Francis Davies in the *Transactions of the Ophthalmological Society of the United Kingdom* (1928, vol. 48, p. 143), where the credit for first describing the condition is given to Bouchut in 1869. These writers, however, describe with illustrations a similar segmentation produced and abolished at will in the *living* animal. They conclude that segmentation in the retinal vessels is not necessarily a sign of death. "Granted that in the large majority of cases it is a sign of death," the writers add, "we would suggest there must be exceptions."—I am, etc.,

The University, Aberdeen. ROBERT RICHARDS.

SIR,—Bouchut in 1869 was the first to describe fragmentation of the blood stream and since then it has generally been looked on as a sign of death. In 1928, however, Francis Davies and I (*Trans. Ophthal. Soc. U.K.*, 1928, **48**, 143) showed that by clamping the vessels to the head and neck in the cat we could produce and, by removing the clamps, abolish this phenomenon at will. I hope this answers Dr. F. Parkes Weber's query (Feb. 14, p. 315) as to what would happen if the heart was successfully induced to contract normally again. Fragmentation of the blood stream is thus a reversible phenomenon, and though it is a presumptive sign of death cannot be regarded as an absolute one. We suggested that the fragmentation was due to an aggregation of the red corpuscles—that is, a rouleaux formation such as occurs in shed blood. This is made possible by the slowing of the blood stream.—I am, etc.,

London, W.1. EUGENE WOLFF.

Canine Hysteria and Agenized Flour

SIR,—We have recently had the opportunity for the first time of being present when Sir Edward Mellanby exhibited his film entitled "Canine Hysteria." In view of the prominence which has been given in the medical press (leading article *British Medical Journal*, 1946, **2**, 903; *Lancet*, 1948, **1**, 27) to Sir Edward's reports on the role of agenized flour and wheat products in the causation of canine hysteria (*British Medical Journal*, 1946, **2**, 885; Ibid., 1947, **2**, 288) and the widespread deductions concerning the importance of agenized flours in the aetiology of canine hysteria which have been based on these reports, we feel that as clinicians closely concerned with canine disorders in our professional duties the attention of your readers should be drawn to certain matters relating to the diagnosis.

1. In several cases shown in the film the clinical signs were not typical of the condition which we have recognized clinically as canine hysteria for many years.
2. The disorder was not similar to the form of canine hysteria that we have observed in the London area and the provinces during the war years, when it has been markedly less common than formerly.
3. In particular, certain animals appeared to exhibit neurological signs, such as severe clonic choreic movements of the jaws and head, complete loss of vision, incoordination of gait, and hyperflexion of the hind limbs, strongly suggestive of localized nervous defects which are more usually associated with the infective encephalomyelitides and are certainly not seen in natural cases of uncomplicated canine hysteria. Furthermore, in the naturally occurring disease the severe epileptiform convulsion is not a common feature.

If the film is truly representative of the syndrome that Sir Edward observed—and we can only suppose that it is so—then there would appear to be grave doubts as to the precise nature of the disorder that Sir Edward was observing, and indeed whether it was in fact a single aetiological entity.

While this possibility does not detract from the interest in the action of the agene process on wheat proteins we would suggest that the term "canine hysteria" should not be applied to this condition until the disorder has been investigated more fully. For the present, therefore, perhaps the term "agene intoxication" might be a more suitable diagnosis for the disorder produced by feeding agenized proteins to dogs.—We are, etc.,

M. HARVEY CLARK. HERBERT PARRY.
JOAN O. JOSHUA. OLGA UVAROV.
S. F. J. HODGMAN.

Newmarket, Suffolk.

Curare in Spastic Conditions

SIR,—I read with interest the article on the above subject by Drs. C. Astley Clarke and R. D. Hotston (Feb. 14, p. 289).

In May, 1947, I treated with the same oily drug a woman aged 61, suffering from paralysis agitans of over four years' duration. There was generalized muscular rigidity in flexed position, the head and neck were moving together, the face was a typical Parkinsonian

mask with wrinkled forehead, there were tremors of the hands, the right worse than the left. She was walking with short shuffling steps, holding on to furniture indoors, and with a stick and the assistance of her daughter out of doors. Pro-, retro-, and latero-pulsion were marked. She suffered from insomnia, and had great difficulty in turning over in bed. Her deep reflexes were increased. She was of high intelligence and spoke with a monotonous voice.

I began with intramuscular injections of 15 mg. of *d*-tubocurarine chloride in oil (30 mg. in 1 ml.), and worked up to 45 mg. On 15 mg. she had no reaction, apart from slight weakness which lasted for a day or two. On 45 mg. she had very severe side-effects, lasting up to seven days, when she was confined to bed, unable to get up owing to weakness, with a feeling of impending death, after which her condition was exactly as before the injection. On 30 mg. there was at times no reaction, but at others it was as severe as that obtained with 45 mg. The injections were always given in the same manner and into the same muscle. When the reaction was favourable (usually on 30 mg.) the clinical picture was as follows. Four to five hours after injection her face became relaxed, she developed a bilateral ptosis and diplopia and a feeling of drunkenness which lasted from thirty minutes to two hours. Gradually a generalized weakness developed in all her limbs, which made it difficult for her to walk about even with assistance, so that she had to be confined to bed. She was off food, very drowsy, and slept well, and felt dispirited. This usually lasted for two days. At the end of this time her strength gradually returned and her walking improved. She felt better, started eating, and on the fourth day after injection she walked without support both in the house and out of doors, much to the amazement and wonder of her neighbours, who had not seen her walk without assistance for over four years. The pro-, retro- and lateropulsion phenomena were absent. I actually pushed her in various directions while she was walking and she did not lose her balance. She could turn over in bed with ease. There was, however, no change in her tremors. She was so delighted with herself that she walked about all day just for the sake of using her legs, like a child who for the first time discovers that it can perform some action and keeps on repeating it. This improvement lasted two to seven days.

I used the drug for three months, and at the end of that time the patient, although she had derived great benefit at times, refused the treatment, owing to the occasional severe side-effects.

I also treated a woman of 40 who had a residual right hemiplegia of four years' duration. Apart from walking better on the third day after injection, there was no change. Her side-effects were not as severe as those of the woman with Parkinsonism.

In both these cases my experience did not quite coincide with the findings of Drs. Clarke and Hotston in the following respects. (1) There was no diminution of side-effects after repeated injections. (2) The side-effects usually started within four to five hours, with one exception where severe reaction occurred in the Parkinsonian case within ten minutes. She developed bilateral ptosis and collapsed, remaining in that state for over two hours. (3) Both the unpleasant reactions and the beneficial effects lasted for days rather than hours. (4) Finally, I was impressed with the apparent unstableness of the drug, and with the unevenness of the reactions in intensity and duration both in the unpleasant and the beneficial effects obtained from an identical dosage, bottle, and technique.—I am, etc.,

Sheffield. I. GOTTLIEB.

Louse-borne Relapsing Fever in Persia

SIR,—Drs. R. I. Bodman and I. S. Stewart (Feb. 14, p. 291) state that louse-borne relapsing fever has not previously been described in Persia. Actually louse-borne relapsing fever was described in Persia after the war of 1914–18 and the epidemic occurred about the same time as the then epidemic of typhus, also louse-borne. It is more than a coincidence that the first and second World Wars were followed by epidemic typhus and relapsing fever in that particularly lousy quarter of the globe. There was an epidemic of louse-borne relapsing fever in Shuster in 1942, which was diagnosed by my assistant Ali Hassan Assidi from blood films sent to Fields and later forwarded to me for confirmation.

In the case of tick-borne relapsing fever the tick—a species of *Ornithodorus*—lives in the dusty floors and cracked walls of mud dwellings and not on the person. Ticks are common enough in Abadan. The older medical missionaries—such as Dr. Shafter, of Ispahan—must have seen many cases of louse-borne relapsing fever in addition to the more common "Mianeh fever" the usual vector for which is *O. papillipes*.

Prof. Charles Oberling—author of the *Riddle of Cancer*—found cases of tick-borne relapsing fever in Tehran about 1942. Generally the infective forms are numerous in blood films from louse-borne cases and are very scanty indeed in preparations from patients with the tick-borne disease. Blood films carefully stained with Leishman or Giemsa were adequate for diagnosis. It would be interesting to try the effect of penicillin on some of these cases.—I am, etc.,

Epping, Essex. FRANK MARSH.

Injection Errors

SIR,—Mr. Harold Dodd (Feb. 14, p. 320) raises some interesting points regarding safety measures to be adopted with injection preparations. Undoubedly much can be done to avoid errors by a rational and unambiguous system of labelling, and a committee set up by the Ministry of Health has recently published recommendations for the labelling of ampoules of anaesthetic drugs.[1]

It appears to be generally agreed that it is desirable to avoid gummed labels on ampoules, and machines which will satisfactorily print directly on to glass are now available at reasonable cost. Use of this method would avoid the danger of labels becoming detached. A further advance would be made if commercial firms could be persuaded to use pharmacopoeial names in their labelling instead of coining new names for established preparations.

The suggestion of tinting a large number of injection preparations with different colours does not appear to be very practicable, since it would lead to the surgeon having to learn the colour of each preparation, and the method could not be applied to substances which have to be protected from the light by the use of amber bottles. Also, since the range of colour in suitable dyes is limited, the use of different shades might lead to confusion with those whose colour-perception is not acute.

With regard to the labelling of rubber-capped multiple-dose containers I suggest that the label should be headed "Injection Solution" or "Intravenous Solution" as the case may be, followed by the B.P. name in large letters. Solutions not intended for injection should never be placed in similar bottles to injection solutions, and local anaesthetics intended for topical use should be clearly marked "Topical Solution—Not for Injection." In both the above cases the use of different coloured labels might be an additional safeguard.

I consider that the final essential in the avoidance of errors is to acquire the habit of deliberately checking the label of any drug used rather than relying on its appearance, and to discard any preparation when there is the slightest doubt about its identity.—I am, etc.,

University College Hospital, London, W.C.1. T. D. WHITTET, Chief Pharmacist.

[1] *Pharm. J.*, 1948, **105**, 54.

Pulmonary Embolism

SIR,—I have read the article by Mr. Norman C. Lake on "The Aftermath of Gastrectomy" (Feb. 14, p. 285) with considerable interest, but I must join issue with him on the problem of pulmonary embolism. The author disposes of this matter in less than six short lines and he shows an extraordinary disregard for all modern knowledge of the subject. He states that embolism "remains a bugbear" and that he knows no effective method of preventing it. This, I submit, is an astonishing statement in 1948, when one would hardly have felt it necessary to commend the work of our Swedish and American colleagues to his notice.

Mr. Lake states that "thrombosis usually arises in the abdominal wall or, as in two of these cases, from extension of thrombosis of haemorrhoids possibly produced by the administration of an enema pre-operatively." These suggestions are surely preposterous, and it is not surprising that anyone believing them remains unaware of any effective method of preventing embolism. I understand that the late Lord Moynihan used to teach that emboli originated from vessels in the abdominal wall, although, so far as I am aware, he never offered any evidence in support of this view. Such hypotheses should now be condemned to the scrap-heap, where their arrival is long overdue; and to those who still favour these views I would suggest a few visits to the necropsy room, where, with the aid of a scalpel, they can soon dispel any remaining scepticism about the paramount importance of the deep veins of the lower limb as a source of post-operative embolism.

Active movements, early rising, prompt recognition of thrombosis in the calves, and abortive treatment with heparin

and dicoumarol should eradicate more than 90% of our yearly toll of deaths from embolism, besides reducing the other morbid effects of thrombosis. Although there are occasional cases where even the most expert may fail to detect deep venous thrombosis, a daily scrutiny of the temperature and pulse charts and examination of the patient's calves should be our ideal. With extension of this practice I trust that the day is not far distant when all surgeons will regard a fatal embolism as a reflection on their standard of post-operative care.

Finally, may I quote from a letter I received only a few days ago from a foreign authority with an international reputation on this subject? "In fact, I have for a long time expected that Britain should awake to conviction of the usefulness of anticoagulant therapy, but your people, which I like more than other nations, are stubborn and conservative."—I am, etc.,

Radlett, Herts. REGINALD S. MURLEY.

Tuberculosis of the Great Trochanter

SIR,—In Mr. B. McMurray's article on "Tuberculosis of the Great Trochanter" (Sept. 27, 1947, p. 492) the author suggests that "where there is radiological evidence of peripheral erosion in tuberculosis of the great trochanter the bony lesion is secondary to tuberculous infection of the trochanteric bursa, and begins only after secondary infection has taken place." Two of the reasons which he produces in support of this are: (1) the five patients in his series who showed no erosion of the bone radiologically were the only ones (except the one with the encysted form) who had not yet developed sinuses and were therefore free from secondary infection; (2) in all the radiographs of peripheral erosion there is definite evidence of sclerosis, and this is undoubtedly due to the secondary infection which is present.

As the total number of cases reported in the literature is so small the following case is of interest as it disproves Mr. McMurray's suggestion that secondary infection must be present before erosion of the base takes place. It does not of course affect his conclusion that the original site of the tuberculous lesion is the trochanteric bursa.

The case history was as follows. The patient was a stoker in the Royal Navy, aged 18, who was running after a football on Sept. 18, 1947, when he first noticed that he could not flex his right hip properly owing to a pain on the outer side of the hip-joint. He had previously noticed no trouble in the joint; there was no history of injury and no other relevant medical history.

He was admitted to the Royal Naval Hospital, Chatham, on Sept. 25 and examination revealed a cystic swelling 2–3 inches (5–7.5 cm.) in diameter situated just anteriorly and above the right greater trochanter. When he stood up the swelling disappeared behind the tensor fascia lata and iliotibial tract. *X* ray showed a fluffiness of the upper surface of the greater trochanter, but no sclerosis. There was no evidence of tuberculosis elsewhere. E.S.R. was 20 mm. in 1 hour (Wintrobe), W.B.C. 7,800 cells per c.mm., and the skin over the swelling was intact. A provisional diagnosis of tuberculous subgluteal bursa was made.

On Oct. 10, 50 ml. of viscid straw-coloured fluid was aspirated from the bursa and sent to the laboratory. It was found to contain 480 leucocytes per c.mm., of which 55% were lymphocytes and the rest polymorphs. No tubercle bacilli were found in a direct film and no organisms seen with Gram stain. Agar culture was sterile after 24 hours.

On Oct. 21, nearly five weeks after the onset of symptoms, the patient was operated upon and the bursa with all its ramifications excised. It was found to contain numerous melon-seed bodies. A caseous area of bone at the upper end of the greater trochanter was curetted out. The wound was closed without drainage and a fortnight later it had healed by first intention. The E.S.R. had fallen to 2 mm. in 1 hour, and the patient was placed in a plaster-of-Paris hip spica.—I am, etc.,

C. G. MARTIN,
Surg. Lieut., R.N.

The Royal Naval Hospital, Chatham.

Brachial Neuralgia

SIR,—The account of a discussion on brachial neuralgia (Nov. 29, 1947, p. 882) brings to light the weaknesses of the general belief that pain is due to pressure on nerve fibres. If pain of uncertain origin is felt in the arm we are permitted to assume that nerves are being subjected to pressure or tension. Then it remains only to discover or to invent a possible mechanism by which pressure or tension might be generated. For long the theory of the cervical rib held sway; and, when this proved inadequate, the "pseudo-cervical rib," or fibrous band that could not be revealed by *x* ray. Later, spasm of the scalene muscles was suggested, and more recently abnormal approximation of clavicle to first rib. Higher up, osteophytic outgrowths or intervertebral disks have been supposed to press on nerve roots.

When pressure on nerve trunks was found inadequate to explain the symptoms, pressure on arterial trunks or on sympathetic fibres was advanced to take its place. From France recently two new explanations of the pain have come: (1) excitation of sympathetic fibres by venous stasis in the scalene tunnel;[1] (2) spasm of the subclavius muscle.[2]

From the advent of the cervical rib theory its inadequacy has been admitted by even its strongest advocates. Thus the signs often extend beyond the field of the root or trunk that is pressed upon. To meet this Oppenheim[3] invoked a genetic deficiency; skeletal and neuropathic defects, he said, are both stigmata of degeneration and may occur in the same subject. Many authors have reported cervical ribs combined with syringomyelia or with disseminated sclerosis.

Before agreeing that pain means pressure on nerves we should ask if pain is prominent in disorders known to cause pressure on nerves. The following evidence is available.

1. Experimental. Pressure on the ulnar nerve causes numbness and tingling, but no pain, in its distribution. "The excitation of a skin nerve in its course (e.g., faradization of ulnar trunk at elbow) it was at one time taught evoked pain only, not sensations of touch. To refute the teaching, the experiment has only to be repeated. The sensation obtained is usually not painful, though always strange."[4]

2. Injury. (*a*) Excluding a small number of causalgic cases, gunshot wounds involving nerve trunks are not especially painful. (*b*) Paralysis of nerves by external compression often is painless—e.g., "Saturday night paralysis," tourniquet paralyses, etc.

3. Tumours. (*a*) Pain is not especially characteristic of tumours of nerves, malignant,[5 6] or benign.[7–9] (*b*) Of 47 benign tumours arising from nerve roots 25 were painless.[10] Dumb-bell tumours of the cord which grow through the intervertebral foramina and press on nerve roots are often completely painless.[11–13] (*c*) Of 53 extramedullary meningiomata pain was felt in only 22.[10] A meningioma that compressed the first dorsal and the lower cervical roots, producing a triplegia, was painless.[14] Extradural cysts that enlarge the spinal canal by erosion usually cause no pain.[15 16] (*d*) Of spinal cord tumours in general Lambert Rogers[17] wrote: "Although for many years pain has been regarded as one of the characteristic features of spinal tumour, several of our cases have run an almost painless course." Of 42 neoplasms reported by Spurling and Mayfield[18] pain was entirely absent in 11 and was an early symptom in only 21.

We shall have to look elsewhere than to pressure on nerves to explain pain in the arm.—I am, etc.,

Melbourne, Australia. MICHAEL KELLY.

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Treatment of Subacute Bacterial Endocarditis

SIR,—Dr. Florence M. E. Davies (Feb. 14, p. 317) discusses the use of penicillin in this condition and states that she thinks that "penicillin merely clears off invaders for the time being, due to the fact that insufficient penicillin may have been given for the numbers of bacteria present. Were this statement in fact true, all that would be necessary to effect a complete and final cure (with the proviso that penicillin cannot restore an injured valve to normal anatomy) in all cases of subacute bacterial endocarditis due to penicillin-sensitive organisms

would be to give sufficiently large doses of the drug for a sufficiently long time.

Surely a more plausible explanation for the failure of penicillin to cure all cases of the disease can be found. With the humility proper in a medical student I suggest that it is because penicillin cannot always reach the causative organisms. In those cases where the blood culture is positive the bacteria may be found on the surface of the vegetations, and it is probably these cases which have the best chance of responding to penicillin therapy.

In those cases, however, where the blood culture is negative, the organisms are found buried beneath a mass of platelets and fibrin, and it is surely these cases that are likely to prove insusceptible to penicillin. It thus appears to be an unfortunate truth that the very defence mechanisms of the body that tend to wall off and localize an infected area also tend to render that area inaccessible to chemotherapeutic agents.

In the particular case of subacute bacterial endocarditis the causative organism is usually the *Streptococcus viridans*, and this bacterium is said to produce a fibrinolysin which is capable of dissolving fibrin. Were this not so it is probable that more cases of the disease would prove resistant to penicillin than actually do so.

Dr. Davies also suggests that the "sulpha" drugs, and perhaps even penicillin, may cause agranulocytosis. She does not support this suggestion with any evidence. While it is true that the "sulpha" drugs may damage the bone marrow and cause a sharp reduction in the number of granulocytes in the blood, I can find no evidence to show that penicillin in therapeutic doses has ever caused agranulocytosis. It therefore seems clear that penicillin, in massive dosage, has a great part to play in the treatment of subacute bacterial endocarditis.—I am, etc.,

London, W.11. B. WATERS.

Relief of Pain in Midwifery

SIR,—As a result of my experience of midwifery in general practice I would like to support Dr. H. Thistlethwaite's contention (Feb. 14, p. 318) that the intermittent use of pure nitrous oxide is more effective in relieving the pains of parturition than a gas–air mixture. However, even this method will fail unless the parturient woman is able to "anticipate" her pains. Using the Wembley gas–oxygen apparatus my patients found that their labour pains were insufficiently relieved if they started to inhale the pure nitrous oxide only when a pain was imminent.

One patient explained that, with her second baby, in the second stage of labour (having learnt the technique from the experience of her first baby) she inhaled the gas whenever she was conscious enough to do so, and in this way she managed to achieve a very satisfactory level of anaesthesia, and I have noticed other patients do the same thing.

In only one case was the slightest alarm experienced. This was in the case of a woman who was having her third baby with the aid of nitrous oxide. I was allowing her to inhale pure gas, and so avidly did she inhale it that she became markedly cyanosed and developed a mild tonic spasm, so that though satisfactorily anaesthetized she clutched the face-piece over her mouth and nose. However the face-piece was readily removed and the cyanosis rapidly disappeared.—I am, etc.,

Ilkley, Yorks. R. JOHN GOURLAY.

Extensive Resection of Small Intestine

SIR,—I was much interested in the extensive resection described by Mr. Leon Gillis and Dr. Michael Newton (Feb. 7, p. 254). Last July I removed rather more than twenty feet of small gut from a very obese patient of 41 years. She had suffered from a large hernia in the umbilical region for the previous 10 years. Two weeks prior to admission there had been a sudden onset of great swelling, tenderness, and vomiting. Such was the tension that the skin overlying the hernia had split open.

At operation, as soon as the sac was touched with the knife huge coils of imprisoned gut shot out of the opening with quite a loud report. Almost the whole of the small gut was found to be gangrenous, and much of the omentum was also strangulated, and was pale green, gangrenous, and foul. Two feet of grossly dilated jejunum remained above the strangulation, whilst distally gangrene extended to within two and a half inches of the ileocaecal junction. As a desperate bid the gangrenous gut was resected and the remaining two feet of upper jejunum was anastomosed to the stump of terminal ileum.

Post-operatively she was given continuous drip saline with "soluthiazole" for four days, then fluids by mouth, and a more solid diet seven days after operation. Frequent bowel actions were troublesome about this time but settled down to a regular action twice daily. Faecal fat content after two months was found to be 50%. Ten weeks after the resection she was readmitted to hospital with an attack of colic, vomiting, and pyrexia, which settled in a few days. At that time there was an obvious loss of weight, which she could well afford. Since then she has remained remarkably well

One might surmise that in such an obese patient the evident reserve in her powers of assimilation from the gut may well have made for recovery where such would have been impossible in a normal type of person.—I am, etc.,

Redhill, Surrey. N. E. PITT.

Oral Intubation and the Davis Gag

SIR,—Mr. J. S. C. Monro's article on this subject (Feb. 7, p. 267) is of particular interest to me as I have in my possession a standard pattern Davis gag modified some years ago for oral intubation. The modification consists of a deep notch in the distal part of the tongue-piece. The anaesthetic tube is made of thin-walled metal tubing slightly flattened and suitably bent to lie snugly between the tongue-piece and the tongue. The end of the anaesthetic tube is held by the notch. The distal part of the tube is made of rubber.

No originality is claimed by me for this device. A similar piece of apparatus designed for use in cleft-palate operations has been described in the *Journal* by Humby.

While the advantages of intubation in cleft-palate operations are quite clear, particularly in pharyngoplasty, the necessity for the method for the dissection of tonsils in children is open to question. Many experienced surgeons and anaesthetists will agree that a capable anaesthetist should be able to provide adequate facilities for a capable surgeon for this operation, and protection for the patient, without intubation.—I am, etc.,

London, W.1. I. W. MAGILL.

Severe Reaction to Penicillin

SIR,—The following case presents some difference from those reported by Dr. D. Heffernan (Feb. 7, p. 277) and Dr. J. F. L. Walley (Jan. 24, p. 150).

The patient was a male aged about 65. Apart from some heartburn, rheumatism, and intermittent claudication due to atheroma of the leg arteries, he had no complaints. Five intramuscular injections of penicillin (calcium salt in oil–wax) were given into the right buttock for a boil in the neck. The first injection was given on the evening of Jan. 6 and consisted of 200,000 units (1.6 ml.) This was followed by 125,000 units (1 ml.) night and morning on Jan. 7 and 8.

The boil, which was surrounded by considerable induration, did well. But for the next three weeks the patient felt easily exhausted and tired, and later inquiry elicited that he had had a slight nagging discomfort in the hypogastric region and in a localized spot in the chest where the 5th left costal cartilage joined the sternum. These were not influenced by rest or food. He also mentioned that on Jan. 11 at 11.30 p.m. he had "a ghastly sensation of the head and neck swelling and appearing to extend to the height of 3 feet and returning to normal in about 10 seconds."

On Jan. 29 began a severe reaction to penicillin consisting of urticaria, chest pain, and vomiting, which prostrated him and made him feel extremely ill. Urticaria began about 5 a.m. and, gradually extending, affected the body from scalp to toes, the itching being extreme. This condition, with exacerbations, lasted for several days and then gradually improved under treatment though present to a certain extent for a further week.

Chest pain began about 3 p.m. and was situated right across both sides of the lower sternum. It increased and by 5.30 p.m. had become severe and was accompanied by a feeling as of a tight band and was followed by sickness. Severe pain lasted about 1½ hours before it passed. A second attack lasting 1 hour came on at 8.30 p.m. and a third about 8.30 a.m. the following morning Thereafter no pain occurred for five days, when there was a short return in the early hours of the morning for 2 or 3 days. Vomiting began after the first attack of chest pain and continued at intervals for two days. The patient could keep nothing down and bile-stained mucus was vomited.

In view of the patient's known atheromatous condition it was thought advisable to exclude coronary thrombosis. Dr. W. A. Bourne was called in and kindly took an electrocardiogram. This showed no signs of coronary occlusion but revealed old myocardial damage, particularly a markedly long P.R. interval.

"Antistin" injections (2 c.c.) b.d. were given for three injections until the stomach settled down, then "benadryl," 50 mg. capsules,

were given by mouth for 7 days. By this time the patient was much better though still weak. Temperature was subnormal throughout and there were no joint pains or joint involvement. The pulse was not much affected. There was no special skin reaction at the site of the injections. Trinitrin did not seem to relieve the chest pain. The bowels were not affected. No previous penicillin either by mouth or injection had been administered.

Although the chest pain strongly suggested a cardiac origin, particularly the first attack (position of pain, sense of constriction, some radiation to the neck), yet I am not at all certain that it might not be due to an allergic reaction in the upper abdomen in the region of the diaphragm. Which organ caused continuous pain in this case must, however, be a matter of conjecture. It is noteworthy that in the last 20 years the patient has had three attacks of severe epigastric pain lasting about 1–2 hours, probably allergic in origin.

This case differs from the two others recently reported in the absence of a raised temperature and of joint involvement. Also it differs in the presence of chest pain and of greater gastric disturbance. The onset of severe symptoms took place 22¼ days after the first injection.—I am, etc.,

Hove, Sussex. WILLIAM CORNER.

Photosensitivity to Sunlight from Use of Sulphonamides

SIR,—In the article by Squadron-Leader Geoffrey Watkinson and Flight-Lieut. Barclay R. Hillis (Oct. 18, 1947, p. 609) the striking observation of appearance of a photosensitive skin reaction from the use of sulphonamides simultaneous with the height of reaction to vaccination was reported. The drug was being used as a prophylactic against tonsillitis—in the month of April—and the reaction to sun-exposed parts was greatest on the tenth day following vaccination. The 470 men treated were divided into four groups. In group A, 213 men were given "sulfa" from the first to the tenth day following vaccination, and in this group 50% "rashes" occurred with "an explosive outbreak," the severity of the rash being related to the severity of the pustule. There was a proportionate decrease of "rashes" in the other groups treated after the tenth day of vaccination. In group D, no "rashes" occurred in the 71 men *who were not* vaccinated (refused or non-reactive). The authors believe that the vaccination pustule may have acted as an inflammatory focus from which toxins were liberated by the sulphonamide causing photosensitivity. They therefore warn against the use of sulphonamide therapy even in small dosage in the presence of an active vaccination pustule—and its use in recently vaccinated ambulatory personnel is not advocated.

These conclusions appear justifiable and with them I am in complete accord. However, it would seem that if one could look upon these results from an entirely different viewpoint there might appear some new highlights upon the subject of vaccination and its possible dangers. Since the authors believe that "sulfa" should not be used in those recently vaccinated, conversely those who are receiving "sulfa," too, should certainly not be vaccinated.

In this opportune group of exposed human experimental animals there is luckily adequate control—group D. The sudden appearance of an "explosive" cutaneous reaction on the tenth day after vaccination is certainly mindful of experimental post-vaccinal encephalitis where an "explosive" type of reaction occurs in the *brain* on the tenth or eleventh day after vaccination. Even the use of the word "explosive" by the authors is choice. It seems that the appearance of an *explosive* type of reaction ten to eleven days after vaccination should be stressed in all organs, tissues, or specialties. In other words this incubation period is the important thing whether we are dealing with a post-vaccinal encephalitic problem, a post-vaccinal ocular, or a post-vaccinal dermatologic problem.

In the dermatologic problem confronting these authors the sensitization may have been solar or chemical or both, but this sensitization prepared certain specific cutaneous areas to reactivity when the antigen–antibody reaction of vaccinia reached its height—namely, the tenth day. This very same sensitization can be assumed to occur in other organs such as the brain and in the eye, as I have attempted to show in ophthalmologic circles. There is little awareness of this problem, for no consideration has been given to the host both as regards his past medical history and as regards medical care immediately following vaccination. Selectivity of subjects for vaccination and subsequent medical alertness to possible complications following this form of inoculation will unquestionably reveal data more valuable than that yielded in the experimental laboratories.—I am, etc.,

Newark, New Jersey, U.S.A. EMANUEL ROSEN.

POINTS FROM LETTERS

Civil Service Control

Dr. N. C. HYPHER (Slough, Bucks) writes: In Mr. Bevan's State medical service all doctors will be at the mercy of permanent Civil Servants. They will keep a tally on our prescriptions, watching for over-prescribing and high average cost. Arguments concerning individual cases of certification will be framed by these clerks with plenty of time on their hands, and the very busy doctor will be tempted to give up the wordy battle. The doctor who is unhappy in a State medical service will be well advised to use all his powers of persuasion with the lesser officials if he wants a transfer to a better area. This may involve another doctor being pushed around. . . .

Plebiscite and Foreign Doctors

Dr. I. PLAKANS (Askern, Yorks) writes: As there appears to be a divergence of opinion as to the attitude to be adopted by the foreign doctors—namely, at the meeting held at B.M.A. House on the evening of New Year's Day it was stated: "It is not to be assumed that alien practitioners would not stand in with the British profession," whereas at the meeting of doctors called by the M.P.U. in Manchester it was assumed that these aliens would prove to be "blacklegs"—may I please be allowed to state our case, as I see it? To defy the Government responsible for our being allowed to be in England, and to whom we are more than grateful, would be ridiculous: to disagree with the majority of the members of the British profession, with whom we wish to work, would be equally fatuous. I think, therefore, there remains only one course open to us—that of strict neutrality.

Make the Best of It

Dr. J. J. ROHAN (Biggin Hill, Kent) writes: Why not make the best of it and try to render the Service first class? If we all go with good intentions into this coming Health Service (which after all is for the benefit of our own people) we will be a very strong union—so strong that if the Minister of Health should ever get it into his head that he could dictate terms to us as regards work and payments we would be in a position to lay down our arms—to a man, all together.

Smallpox and Chicken-pox

Dr. A. J. AMBROSE (Beckenham, Kent) writes: Dr. C. Simpson Smith's interesting article on smallpox in Staffordshire (Jan 24, p. 139) must have been of great interest to medical men who have had difficulty in differentiating smallpox from chicken-pox. But though the pundits attach much importance to umbilication, shotty papules, etc., the most important sign in my experience has been the greater number of pocks on the head and face area as compared with the chest, trunk, and limbs. In the 1914–18 period I saw three patients in whom the rash was indistinguishable from chicken-pox, but whose pocks gave this numerical preponderance in the head and face region, and their prompt isolation prevented an epidemic of smallpox.

Relief of Pain in Midwifery

Dr. ELIZABETH A. NETTELL (Exmouth, Devon) writes: To my mind what is needed is re-education of the midwife. Even to-day many midwives seem incapable of dissociating themselves from the idea that analgesia slows down labour and makes it more difficult. Many times, having visited a patient during the first stage and left her with Minnitt's or trilene apparatus rigged up and ready for use, I have returned later to find the face-piece flung aside and a pushing, groaning patient—a roller towel her only analgesia. The midwife's triumphant, "She thinks she can push better on her own, Doctor," leads me to suspect that the patient is only doing what is suggested to her.

Until the midwife has a change of heart or unless the doctor can be present throughout labour I feel that analgesia for the whole of the second stage will never be adequate.

Dressing of Finger-tips

Dr. C. R. B. VINCENT (Walthamstow, E.) writes: Finger-tips dressed with routine firm bandaging for bleeding due to nail avulsion, "slice injury," or removal of warts often reappear several hours later with a saturated dressing and continued oozing.

The following method of treatment has been applied successfully in many cases. It is simple and rapid, and obviates the blood-stained bandage and the necessity for a sling. The wound is cleaned and a penicillin tablet or powder applied. The raw area is covered by a small square of tulle gras, and a rubber rectal finger-stall is fitted over this without displacing the dressing and is rolled down as far as the centre of the middle phalanx. A small gauze dressing encircles the finger-stall and is bandaged firmly and left for 48 hours.

A.T.S., penicillin, and analgesics are given as indicated. No sling is needed, and the smallness of the dressing allows early finger movements. The dressing is easily removed without any sticking.

Obituary

V. S. HODSON, M.V.O., D.M., F.R.C.P.

Dr. Vincent Sutherland Hodson, who died suddenly on Feb. 9 from coronary occlusion, was born in 1874. He was educated at Christ's Hospital and at Oxford, where he took his B.A. in 1895. He began his medical education at St. Thomas's Hospital and graduated B.M., B.Ch. in 1900. He acted as house-physician to Dr. Theodore Dyke Acland, thus initiating a lifelong friendship, and also held the post of resident accoucheur. In 1902 he was appointed R.M.O. at the Kasr-el-Aini Hospital in Cairo, and in 1904 he joined the Sudan Government Medical Department, which was then being constituted on a civilian basis five years after the reoccupation of the country.

Dr. Hodson obtained his M.R.C.P. in 1905 and he helped to build up the traditions of his service. As medical inspector and later as senior medical inspector he was stationed mainly at Atbara, and during these years a modern hospital was built there and public health work was established on efficient lines. In 1916 he was appointed assistant director of the service, later refusing the directorship and preferring a clinical appointment as director of Khartum Hospital, which post he held till his retirement in 1924. The Kitchener School of Medicine had not then been opened, but Hodson did much valuable preparatory work in the training of subordinate medical staff.

In 1924 he was appointed assistant physician to the Victoria Park Hospital, and in 1928 he succeeded Dr. Acland as medical representative of the Sudan Government in London. In the same year he was elected F.R.C.P., and he also became a member of the Egyptian Medical Board. He was a governor of St. Paul's School and a liveryman of the Mercers' Company, serving as master of the Company in 1932–3. For some years he was Gresham Lecturer in Physic. He retired from practice in 1938 and lived thereafter at Southwater, near Horsham.

Hodson had suffered from a chronic illness in childhood but had grown up sturdy and strong though short in stature. He lived an active life, being a keen golfer and tennis player. He was also a good bridge player. He was very quick and energetic and would make up his mind without hesitation—sometimes possibly without sufficient thought. He was apt at times to give offence by his somewhat brusque manner and sharp tongue, but he was a most loyal and considerate friend who was always ready and anxious to do all he could for those who stood in need of his help and advice. The large attendance at the memorial service in Southwater Church was a recognition of the affection and regard in which he was held by those among whom he had lived for the last nine years.

Dr. GERALD WEBB, who died recently in Colorado Springs, was born in Cheltenham in 1871. A student of Guy's Hospital, he graduated in London and in Denver, and spent some time as a postgraduate student in Vienna. He settled in America towards the end of the last century and soon became well-known for his work on tuberculosis. In 1917–18, as a colonel with the American Forces, he was adviser on tuberculosis to the American Expeditionary Force. On more than one occasion he represented the United States as an official observer at International Conferences, notably those which were held in Rome in 1912 and in Paris in 1920. Dr. Webb was also well known as a sportsman and particularly as a polo player. For his work on tuberculosis he was granted the honorary degree of D.Sc. by the University of Colorado, and in 1939 he was awarded the Trudeau Medal for research by the National Tuberculosis Association of America, of which he was at one time president. Dr. Webb married a grand-daughter of Jefferson Davis. She predeceased him, and he leaves four children and a brother in England.

Dr. JOHN TEARE died at the Royal Infirmary, Liverpool, where he was once a house-physician, on Jan. 26 at the age of 82. Dr. Teare was a student at Liverpool and graduated there in 1904, taking the D.P.H. in 1909 and proceeding M.D. in 1912. He had served as a major in the R.A.M.C. during the 1914–18 war, and he had spent many years in New Zealand. He was at one time port medical officer at Wellington and medical officer for the militia and police there; he also served as a J.P. in New Zealand before returning to this country and going into practice in the Isle of Man. At different times he worked in the Fever Hospital at Fazakerley, Liverpool, the Myrtle Street Eye Hospital, Liverpool, and the Children's Infirmary, Birkenhead. Subsequently he became interested in public health work and was assistant medical officer of health for Hampshire, tuberculosis officer for Nottinghamshire, and finally assistant medical officer of health for the West Riding of Yorkshire. He celebrated his retirement from active practice by attending the Melbourne Annual Meeting of the British Medical Association, and since then he had toured India. He was an honorary life member of the St. John Ambulance Association, a fellow of the Society of Medical Officers of Health, and a member of the Royal Sanitary Institute.

Dr. THOMAS DAVID COULTHARD ROSS died at his home in Oldham on Feb. 2 at the age of 63. Dr. Ross, who graduated at Glasgow University in 1907, came to Oldham first as assistant and subsequently as partner to the late Dr. Doble. By hard work, ability, and kindly understanding he built up one of the largest and busiest practices in the Oldham area. As is often the case with busy men, Dr. Ross found time for recreation and for serving his colleagues. He was a keen if not brilliant golfer and an enthusiastic member of a local bridge club. He was the senior member of the Local Medical and Panel Committee and a member of the Local Executive Committee of the British Medical Association. At the inception of the Local Medical War Committee in 1939 Dr. Ross was elected secretary, and no better choice could have been made. This arduous task became a real joy to him, and his work for the committee carried the hall-mark of efficiency and tact. The praise he earned from colleagues returning from the Forces for the excellent manner in which the Protection of Practices Scheme had been carried out in Oldham was to him sufficient recognition. However, a more tangible reward followed, when on the occasion of his retirement from active practice in 1946 he was presented with a handsome canteen of cutlery for the great service he had rendered to the profession locally during the war years. Unfortunately the illness which had caused him to give up his work did not respond to the rest which he so badly needed, and for two years he was a sick man. During his illness, when at all possible, he continued to show his usual interest in the welfare of his colleagues and would make a special effort to attend any meeting where he thought his advice would be helpful. He is survived by his wife and three daughters. His only son was killed while on active service with the R.A.F. during the war. His patients and his colleagues will certainly be the poorer for the passing of Tom Ross.—C. H. S.

Dr. JOHN HERBERT PORTER, who died suddenly on Feb. 10 at the early age of 50, was born in Preston, Lancashire, and at the time of his death was chief assistant medical officer of health for his native county. Educated at Preston Grammar School, he won a scholarship and an open entrance exhibition in mathematics at Downing College, Cambridge, in 1916. He secured a second class in the natural science tripos in 1918, and later won the Goldsmith Entrance Exhibition in anatomy and physiology at University College Hospital, London. During the 1914–18 war he volunteered for active service on several occasions, but was not accepted. He obtained the conjoint diploma in 1921 and took the Cambridge M.B. in 1924. After holding a number of hospital appointments he obtained a diploma in public health, and in 1925 was for a time acting deputy medical officer of health for the Metropolitan Borough of Bethnal Green. Later in the same year he was appointed assistant school medical officer to the London County Council. In 1927 he joined the staff of the Lancashire County Council as assistant county medical officer. It was in the south-eastern part of the county that Porter spent the earlier part of his career in Lancashire, working in Royton and Crompton until 1935. He was then seconded as medical superintendent to Park Hospital, Davyhulme, where his outstanding work led inevitably to his promotion to the position of chief assistant county medical officer when that post became vacant. The high promise of his early academic career was maintained in his later clinical work, and an investigation he undertook on congenital and developmental abnormalities, published in 1933, was a model of first-class research.

Quiet and unassuming in character, his judgment was sound, and despite a never very robust physique he never spared himself. The last few months of his life were marred by illness, and just when he appeared to have regained his health he was

struck down. Outside medicine, his interests were in yachting and gardening, and much of his leisure time was spent with his yacht at Lytham. Gentle and most courteous in bearing, Dr. Porter possessed great charm of manner, and, coupled with a sympathetic nature, this won for him popularity not only with his patients but also with his colleagues, professional and lay, by whom he was held in high regard and affection. Deep sympathy is extended to his widow in her great loss.—F. H.

Medical Notes in Parliament

The Minister and the Plebiscite Results

On Feb. 19 Mr. LIPSON asked the Minister of Health if he would now invite representatives of the British Medical Association to meet him so that a further attempt might be made to ensure that the National Health Act would have the co-operation and good will of the doctors when it began to operate on July 5.

Mr. BEVAN: I remain ready to co-operate closely with any professional spokesmen who want, with me, to make the new Service a success.

Mr. LIPSON: Can the Minister go a little further and invite representatives of the doctors to meet him, because, in the interests of the Health Service, all the country wants is a victory for common sense?

Mr. BEVAN: We all want a victory for common sense, but I should not be entitled to go behind the back of the House and suggest that Parliament can surrender any position it has taken up.

Sir HENRY MORRIS-JONES: Would the right hon. gentleman care to make a start towards proper negotiations again by withdrawing a statement which he made about the "raucous voiced" leaders of the British Medical Association, who have now been shown clearly as only interpreting the wishes of their constituents?

Mr. BEVAN: It remains to be seen how long they will interpret the wishes of their constituents. The answer to the hon. Member is that, as the debate last week showed, every concession has been made by the Government. It is now time that concessions were made on the other side.

Lieut.-Col. LIPTON: Will the Minister see that the loyal and gallant minority of doctors who are willing to co-operate with the Government is protected against any possible form of intimidation and victimization?

Mr. BEVAN: Certainly.

Mr. LIPSON: Is the Minister aware that I am not asking him to go behind the back of Parliament, but to follow up some of the concessions which were suggested, or some of the doors he opened, in his speech in the House, to see if it is possible to resume negotiations?

Mr. BEVAN: I am always ready to listen to any fresh representations that may be made to me. I have always been ready to meet the representatives of the medical profession, and am still ready if they have any fresh suggestions to make.

Freedom to Publish

Col. STODDART-SCOTT on Feb. 12 asked the Minister of Health whether those doctors and dentists who entered the National Health Service would have freedom to publish articles and books with regard to the organization and administration of the Health Service and freedom to publish such articles without having to seek permission of individuals or authorities.

Mr. BEVAN replied: "So far as I am concerned, yes, Sir."

Scientific Books

In the House of Lords on Feb. 18 Lord BALFOUR OF INCHYRE called attention to the present restrictions on the import of books, which reduced British intellectual and scientific contacts with other lands. Before the war there were no restrictions on the import of books into this country. During the war it was necessary to restrict importation from all countries. Immediately after the war the restriction was on the basis of 100% of the 1938–9 imports of scientific books. An open general licence allowed the import of books from the Commonwealth but not from the United States, and the quota was later raised to 200%. From January, 1947, because of the Bretton Woods agreement, no discrimination was allowed against the United States and the open general licence was extended to books from there, but the quota for the Commonwealth was reduced to 100% of the 1938–9 trade. In September, 1947, the Board of Trade stopped the open general licences and instituted a selective individual licence which was now in force. This theoretically allowed an import of scientific books up to 100% of the 1938–9 trade, but in practice few licences were granted and it took time to obtain them. The University of London reported great difficulty in obtaining American scientific books and a general delay of eight to ten weeks. In the University of Durham lecturers had to write weekly sheets for distribution to their classes because of the difficulty of getting textbooks. The *Annual Review of Biochemistry*, which was published in America, was held up in this country for many months this year through customs difficulties. The Physiological Society had also complained. It was sometimes four or five months before people could get books which were at the dockside, and he suggested the Minister should lay down a maximum time within which licence applications should be dealt with.

Lord CHERWELL said the country was now back to the conditions of the Middle Ages, and in Oxford undergraduates had to lend each other a book for twenty-four hours. An Oxford bookshop which applied for a licence in September, 1947, had not received it by the middle of February, 1948.

Lord MOYNE said the regulations made it difficult for Dublin publishers to sell their books even in Belfast.

Replying for the Government, Lord CHORLEY said that last July and August the Government had been confronted with a difficult economic situation and it would have been unreasonable to leave books untouched when it was cutting down food supplies. The President of the Board of Trade was discussing the question with learned institutions and as a result there might be some increase in the quota, but he would not hold out the hope that it would be an increase to 200%. The business of looking into the quotas had practically come to an end and in future the delays ought not to be so serious. It had been suggested that blanket licences should be issued to universities and similar institutions to enable them to import books. There existed an open licence to any individual to import a particular book. He could get currency from his bank, give an order to a bookseller in America, and import a book by parcel post. Many professors and scientists had imported books in this way, but universities were not constructed to embark on the business of importing books. If it was found that the general quota could be increased the most effective agents for dealing with the demand would probably be the regular dealers who imported books from America.

Aliens Committee

Answering Mr. BENN LEVY on Feb. 12, Mr. EDE said that, in controlling the admission of foreign doctors to take employment or set up in practice in this country, he was advised by the Aliens Committee of the Central Medical War Committee, a body widely representative of the medical profession which was set up by direction of the Committee of Imperial Defence to advise on the utilization of the medical manpower of this country. The main Committee was reappointed annually and its membership was approved by the Minister of Health. As regards foreign doctors already accepted as residents here, the Aliens Committee was asked for its views on the suitability of the proposed employment or the location of the proposed practice, as the case might be; as regards foreign doctors who had been admitted to this country for some temporary purpose and then asked permission to practise, the aspect on which the Committee advised was the value of the contribution which the practitioner in question was able to make to the medical knowledge and services of this country. The constitution of the Committee was as follows:

The Chairman of the Central Medical War Committee (*ex-officio*), Mr. H. S. Souttar; *representatives of Royal Colleges:* Sir Arthur McNalty, Sir Alfred Webb-Johnson, Mr. J. M. Wyatt; *representatives of the B.M.A.:* Drs. H. Guy Dain, L. Haden Guest, F. Gray, J. A. Brown, J. C. Matthews, T. MacCarthy, J. M. Johnstone, and Prof. Samson Wright; *representative of the Society of Medical Officers of Health:* Dr. J. A. Struthers. Representatives of the Home Office and Ministry of Health attend the meetings of the Committee as observers and for the purpose of giving the Committee any information they might desire. Mr. LEVY suggested that an eminent Italian urologist had been refused permission to work in spite of testimonials from leading British physicians.

Two-year Pensions.—Mr. BUCHANAN has decided that in future following a resurvey board the award of pension for war disablement will normally be for a period of two years.

Papworth.—After July 5 Papworth Industries, Limited, will continue under voluntary management, but the sanatorium will become part of the National Hospital Service.

Unexpired Covenants.—Unexpired deeds of covenant to hospitals which are being taken over by the Government will, like other endowments, pass, in the case of teaching hospitals, to the new

Boards of Governors and, in the case of non-teaching hospitals, to the Hospital Endowments Fund for use at the discretion of the hospital bodies for hospital purposes or research. They will not pass to the Exchequer. This assurance was given by Mr. J. EDWARDS on Feb. 10.

N.H.S. Buildings.—Mr. BEVAN informed Sir ERNEST GRAHAM-LITTLE on Feb. 10 that no immediate substantial increase of building work under the National Health Service Act had ever been promised or regarded as feasible. Building developments in all fields of the Act would be carried on as fast as conditions allowed.

Dental Spens.—Mr. BEVAN hopes to receive during March the Spens Committee recommendations in regard to the remuneration of dental practitioners under the new Health Service.

Service Medical Histories.—Mr. A. V. ALEXANDER is considering with the Service Ministers whether the medical history of a demobilized man can at his request be made available for life assurance purposes.

Medico-Legal

ARTIFICIAL INSEMINATION AND LEGITIMACY

[FROM OUR MEDICO-LEGAL CORRESPONDENT]

American legal thought is related closely enough to our own to make our courts pay respectful attention to American decisions. Weighty opinion in this country has declared that a child born of an artificial insemination with semen not the husband's is illegitimate.[1] As the question has not yet come before one of our courts, that view is not supported by authority. Now Mr. Justice Greenberg, of the Supreme Court of New York State, has pronounced in the opposite sense.[2] A wife obtained a separation decree with principal custody of the child, a girl of 4. Desiring to prevent the husband from seeing the child, she testified that he was not the father but that she had been artificially impregnated with a donor's seed. The judge, assuming the truth of this statement, still allowed the husband his previous Sunday visits. He held that the child had been adopted or semi-adopted by the husband, who was thus entitled to the same rights as those acquired by a foster parent who has formally adopted a child, if not the same rights as those to which a natural parent would in the circumstances be entitled. Moreover, the child was not an illegitimate child. Logically and realistically the situation was not different from that of a child born out of wedlock and made legitimate on the marriage of the interested parties. He expressly declined to discuss either property rights or the propriety of artificial insemination.

Even if this decision were binding here, its authority would, of course, be limited to cases involving similar circumstances. It says no more than that husbands who have allowed their wives to be impregnated with the semen of a donor ought to be regarded for certain limited purposes as fathers. The judge's attention was primarily directed to the best interests of the child, as was shown by his remark in the course of the hearing that the court would not lend itself to making any child illegitimate. If he had been trying a case involving, for instance, succession to property, or registration, or a charge of adultery, other considerations would have arisen which might have affected his conclusion. Nevertheless, his view was based on common sense, and is bound to carry weight in all future discussion of this difficult problem.

[1] *British Medical Journal*, 1947, **1**, 605.
[2] *Strnad* v. *Strnad*, 1948 (see also *News of the World*, Jan. 18).

The Services

Brigadier (local) R. A. Broderick, D.S.O., *M.C.*, M.B., Ch.B., R.A.D.C., Emergency Commission, has been appointed Honorary Dental Surgeon to the King.

The Efficiency Decoration has been conferred upon the following officers of the Territorial Army: Colonel G. D. Kersley, Lieutenant-Colonel L. P. Marshall, M.C.(T.A.R.O.), and Major H. Hall-Tomkin, R.A.M.C.

Universities and Colleges

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH

At a quarterly meeting of the College, held on Feb. 3, with the President, Dr. W. D. D. Small, in the chair, Drs. J. C. R. Greig (Kirkcaldy), I. N. Sutherland (Edinburgh), R. O. Gillhespy (Birmingham), J. G. Macleod (Edinburgh), and T. G. Brown (Hamilton) were introduced and took their seats as Fellows of the College.

Drs. E. W. Frecker (Sydney, N.S.W.), D. N. Dobbie (Bromley, Kent), and S. F. Oosthuizen (Pretoria) were elected Fellows of the College.

Drs. J. G. Dathan (Stoke-on-Trent), S. G. Nelson (Sydney, N.S.W.), F. J. Booth (Brisbane, Queensland), J. Adler (Clarkston, Renfrewshire), J. J. Tillie (Edinburgh), W. E. MacLean (Aviemore, Inverness-shire), J. Leckie (Pitcaple, Aberdeenshire), A. K. S. Ahmed (Dacca, Bengal), G. Comay (Capetown), W. R. N. Friel (Birmingham), D. E. Ross (Edinburgh), M. Beaton (Edinburgh), W. H. Galloway (Edinburgh), A. B. Hegarty (Edinburgh), T. G. Fox (London), G. M. Carstairs (Edinburgh), Elsie C. Gibbons (Wellington, N.Z.), J. S. Calnan (Eastbourne), S. B. Roy (Rangoon), J. Buch (Johannesburg), A. H. Banton (Edinburgh), R. McK. Fulton (Edinburgh), J. N. Swanson (Edinburgh), P. J. J. Barnard (Gwelo, S. Rhodesia), S. Jacobson (Johannesburg), D. H. Clark (Edinburgh), Marjory A. Keith (Edinburgh), and Hilary F. H. Hamilton (London) were elected Members of the College.

Medical News

Plymouth Hoe

In a broadcast on Saturday, Feb. 21, Mr. Hugh Dalton, M.P., stated that on Plymouth's new housing estates were a number of doctors, ex-Servicemen, who were signing on for the new Health Service. "These young doctors," he stated, "are not following the lead of the old gentlemen who run the B.M.A." Dr. George Deery informs us that on the new housing estates at Plymouth there are only three doctors, only one of whom is an ex-Serviceman.

Congratulations from Australia

As we went to press we received the following telegram from Sir Henry Newland: "Federal Council warmly congratulate profession on its action to maintain professional freedom."

Good Wishes from Belgium

The Brussels College of Medicine sends its sincere good wishes to the British Medical Association for success in its fight to maintain the liberty of the medical profession in Great Britain.—President F. Bremer, Professor of the Free University of Brussels; General Secretary, Dr. J. Lederer, University of Louvain.

Royal Melbourne Hospital Centenary

Dr. William Evans, F.R.C.P., has left London to attend by invitation the Centenary Meetings of the Royal Melbourne Hospital. He will also lecture at Adelaide and Sydney. Sir Hugh Cairns, who is representing surgery, has already arrived in Australia.

World Health Assembly

The first World Health Assembly will be held in Geneva in June. Subjects tabled for early discussion by the World Health Organization include such tropical communicable diseases as cholera, yellow fever, and malaria, and more general topics such as child health, standardization of biological products, and rural hygiene.

Personal Support for Hospitals

The British Hospitals Association has issued a memorandum on personal support for hospitals in the National Health Service. It emphasizes the need for continuing personal interest in, and voluntary service for, the hospital patient. Gifts can be made after July 5 to a particular hospital and will be retained by that hospital for its own particular use, thus preserving in the future that intimate association between hospital and supporter which is of such importance to both. These gifts need not be earmarked for a special purpose and will in no circumstances be taken away from the hospital by the State, either for redistribution or for relieving the Treasury of meeting the full costs of the ordinary maintenance of the hospitals and their services. The memorandum can be obtained from the British Hospitals Association, 52, Green Street, London, W.1.

Medical Certificates for Diabetics

The Minister of Food has decided on the advice of the Food Rationing (Special Diets) Advisory Committee of the Medical Research Council that doctors may in future certify patients suffering from diabetes mellitus for extra allowances of food on form R.G.50 instead of on the special form which required a statement of the insulin dosage. A statement of the insulin dosage need no longer be given. Form R.G. 50 will qualify the holder for extra allowances of meat, cheese, butter, and margarine until the end of the rationing year. These allowances can be renewed at the end of the rationing year without a further medical certificate. If a doctor wishes a diabetic patient to receive also a priority allowance of milk, he should state on the R.G. 50 both that the patient is suffering from diabetes mellitus and the appropriate classification for milk as set out in Med. 2. The milk allowance will be granted up to the end of the rationing year and will be renewed only against a further medical certificate.

Cost of Health Service

A Vote on Account published by the Government recently shows that the National Health Service for England, Wales, and Scotland will require £149,675,000, as compared with the present cost, £2,981,905.

Scilly Isles in N.H.S.

The Isles of Scilly (National Health Service) Order, 1948, extends to the Scilly Isles the provisions of the National Health Service Act, 1946, with certain modifications. The Council of the Isles will be the local health authority for the purposes of the Act. The Executive Council for the Isles will consist of a chairman appointed by the Minister of Health and the following: (*a*) such members of the Council of the Isles as have notified the chairman in writing of their desire to serve in the Service; (*b*) such medical and dental practitioners and registered pharmacists as, in the opinion of the Council of the Isles, are permanently resident or are practising in the Isles, and have notified the chairman of their wish to serve as members; (*c*) two members appointed by the Minister.

Order of Orange Nassau

The Queen of the Netherlands has conferred the following appointments to the Order of Orange Nassau in recognition of services to Netherlands interests during the war:

As Grand Officer: Major-General Sir Henry Letheby Tidy, K.B.E., M.D., F.R.C.P. *As Commanders:* Prof. H. P. Himsworth, M.D., F.R.C.P.; Sir Jack C. Drummond, D.Sc., F.R.S.; and Sir Francis R. Fraser, M.D., F.R.C.P. *As Officers:* Charles F. Harris, M.D., F.R.C.P.; Maurice Mitman, M.D., F.R.C.P.; and C. Bowdler Henry, M.R.C.S., L.R.C.P. *As Chevalier:* J. Nairn Dobbie, M.B., Ch.B.

Recruitment and Training of Nurses

The Nuffield Provincial Hospitals Trust has submitted to the Ministry of Health some observations on the Working Party's Report on the Recruitment and Training of Nurses. The Trust maintains that in order to obtain the necessary data a complete job-analysis of the nurse's work should be carried out. It agrees that full student status should be accorded to nurses in training; therefore the training of nurses should be entrusted to educational bodies. An interesting recommendation is that the General Nursing Council should be reconstituted as an educational organization, the disciplinary work of the Council being delegated to a statutory penal committee.

COMING EVENTS

South Wales Medical Ex-Service Association

The South Wales Medical Ex-Service Association was formed last year with the object of holding an annual reunion dinner. All medical men who have served in either great war are eligible to attend. Owing to the current food restrictions the reunion this year will take the form of a buffet supper, which will be held at the Park Hotel, Cardiff, on Saturday, March 6, at 7 p.m. Tickets, 10s. 6d. each, may be obtained from the honorary secretary, Dr. K. M. Wheeler, Anatomy Department, University College, Newport Road, Cardiff.

Centenary Service

A service will be held at the Priory Church of St. Bartholomew the Great, Smithfield, London, on March 25, 1948, at 11.30 a.m. prompt, commemorating the centenary of the birth of the late Sir Francis Champneys, Bt., M.A., D.M., F.R.C.P., Vice-Patron of the Royal College of Obstetricians and Gynaecologists, Hon. Fellow of the Royal Society of Medicine, and Chairman of the Central Midwives Board from its inception in 1902 until his death in 1930. Admission will be by ticket only. Inquiries should be addressed to the Clerk to the Governors, St. Bartholomew's Hospital, E.C.4.

Medical Society of London

The 168th anniversary dinner of the Medical Society of London will be held at Claridge's Hotel, Brook Street, London, W., on Thursday, March 11, at 7.30 for 7.45 p.m.

International Congress on Mental Health

A meeting to discuss the aims of the International Congress on Mental Health, to be held in London in August, and to receive a report of the progress made towards the success of the congress, will be held at the Royal Society of Medicine (1, Wimpole Street, London, W.) on Thursday, March 4, at 8 p.m., when Dr. J. R. Rees, president of the congress, and Prof. J. C. Flugel will speak. Admission to the meeting is free.

Kent and Canterbury Hospital

The next monthly clinical meeting at the Kent and Canterbury Hospital, Canterbury, will be held to-day (Friday, Feb. 27), at 5 p.m.

SOCIETIES AND LECTURES

Monday

MEDICAL SOCIETY OF LONDON, 11, Chandos Street, Cavendish Square, W.—March 1, 9 p.m. "*Clinical Pathology in Relation to Medical Practice.*" Third Lettsomian Lecture by Dr. C. E. Dukes. (Change of date.)

WESTMINSTER HOSPITAL SCHOOL OF MEDICINE: MEYERSTEIN LECTURE THEATRE, Horseferry Road, S.W.—March 1, 5.30 p.m. Clinico-pathological demonstration. "*Treatment of Chronic Peptic Ulcers.*" Discussion.

Tuesday

INSTITUTE OF DERMATOLOGY, 5, Lisle Street, Leicester Square, London, W.C.—March 2, 5 p.m. *Pathological demonstration*, by Dr. I. Muende.

UNIVERSITY COLLEGE LONDON: DEPARTMENT OF PHYSIOLOGY, Gower Street, W.C.—March 2, 5 p.m. "*Some Aspects of General Physiology*," by L. E. Bayliss, Ph.D.

Wednesday

BRITISH INSTITUTE OF PHILOSOPHY.—At Eugenics Theatre, University College, Gower Street, London, W.C., March 3, 7.30 p.m. "*Philosophy and Religion*," by Dr. J. Hartland-Swann.

EDINBURGH CLINICAL CLUB.—At Edinburgh Royal Infirmary, March 3, 4 p.m. "*X-ray Therapy*," by Dr. R. McWhirter.

ROYAL INSTITUTE OF PUBLIC HEALTH AND HYGIENE, 28, Portland Place, London, W.—March 3, 3.30 p.m. "*The Planning of a Modern Hospital in Relation to the Public Health*" (*Illustrated*), by Mr. S. E. T. Cusdin, A.R.I.B.A.

Thursday

FACULTY OF HOMOEOPATHY.—At London Homoeopathic Hospital, Great Ormond Street, London, W.C., March 4, 5 p.m. "*The Art of Diagnosis*," by Dr. A. P. Cawadias.

INSTITUTE OF DERMATOLOGY, 5, Lisle Street, Leicester Square, London, W.C., March 4, 5 p.m. "*Diseases Affecting the Lips and Mucous Membranes*," by Dr. B. Russell.

INSTITUTE OF LARYNGOLOGY AND OTOLOGY, 330, Gray's Inn Road, London, W.C. March 4, 5.30 p.m. "*The Treatment of Acute Otitis Media*," by Mr. G. Ewart Martin.

LONDON JEWISH HOSPITAL MEDICAL SOCIETY.—At London Jewish Hospital, Stepney Green, E., March 4, 3 p.m. *Clinical meeting.*

MEDICAL SOCIETY OF THE L.C.C. SERVICE.—At County Hall, Westminster Bridge, London, S.E., March 4, 4.15 p.m. Papers: "*Blood Transfusion with Special Reference to the Rhesus Factor*," by Dr. E. N. Allott; "*Transfusion of Infants with Erythroblastosis Foetalis*," by Dr. C. A. Holman; "*Jaundice Following Blood Transfusion*," by Dr. A. G. Signy. A general discussion will follow.

ROYAL PHOTOGRAPHIC SOCIETY.—At 16, Prince's Gate, London, S.W., March 4, 7 p.m. Annual general meeting. "*The Application of Medical Photography to Venereal Disease.*" Lecture by Dr. C. Hamilton Wilkie.

ST. GEORGE'S HOSPITAL MEDICAL SCHOOL, Hyde Park Corner, S.W.—March 4, 4.30 p.m. *Neurological lecture-demonstration*, by Dr. A. Feiling.

Friday

ATOMIC SCIENTISTS ASSOCIATION: LONDON BRANCH.—At Royal Society of Arts, John Adam Street, Adelphi, W.C., March 5, 7 p.m. "*Medical and Biological Applications of Atomic Energy*," by Dr. W. J. Arrol.

LEEDS AND WEST RIDING MEDICO-CHIRURGICAL SOCIETY.—At Leeds General Infirmary, March 5, 8.30 p.m. *Clinical meeting.*

LONDON CHEST HOSPITAL, Victoria Park, E.—March 5, 5 p.m. "*Sinus Infection in Chest Diseases*," by Mr. J. W. S. Lindahl.

ROYAL MEDICAL SOCIETY, 7, Melbourne Place, Edinburgh.—March 5, 8 p.m. *Valedictory Address* by the Senior President.

SOCIETY OF PUBLIC ANALYSTS.—At Royal Society, Burlington House, Piccadilly, London, W., March 5, 5 p.m. Annual general meeting. "*The Proximate Analysis of Mixtures by Methods depending on Differential Solubility and Saturation*," by G. M. Bennett, Ph.D., Sc.D., F.R.I.C., F.R.S.

Saturday

ROYAL SANITARY INSTITUTE.—At the Modern Secondary School, Stow Hill, Newport, March 6, 10 a.m. "*The Hospital Services of South Wales.*" Paper by Dr. A. Trevor Jones.

APPOINTMENTS

Frank F. Main, M.B., Ch.B., D.P.H., Medical Officer of Health for the City of Perth, has been appointed Senior Administrative Medical Officer to the Scottish Eastern Regional Hospital Board.

J. L. le C. Walker, M.R.C.S., L.R.C.P., has been appointed medical officer at Leeds prison in succession to Dr. F. H. Brisby.

FANNING, JAMES, M.D., D.P.H., Deputy County Medical Officer for Surrey.
JACOBY, M. G., M.B., B.S., Government Medical Officer, Newfoundland.
MIDDLESEX COUNTY COUNCIL.—The following senior appointments are announced: A. C. T. Perkins, M.D., D.P.H., to be County Medical Officer of Health; V. G. Bonnin, F.R.C.S., M.R.C.O.G., to be Surgeon to Central Middlesex County Hospital; K. S. Mullard, F.R.C.S.Ed., to be Thoracic Surgeon to Hillingdon and Harefield County Hospitals.

BIRTHS, MARRIAGES, AND DEATHS

BIRTHS

Eastes.—On Feb. 14, 1948, at The Bank House, Marshfield, Glos., to Dr. Zeta Eastes (*née* Matthews), wife of Dr. Henry J. Eastes, a sister for Martin and Janet—Cherry.

Edwards.—On Feb. 8, 1948, at Sutton, Surrey, to Joan (*née* Shepherd), wife of Dr. F. Hately Edwards, a son.

Hylton.—On Feb. 19, 1948, at Clevedon, to Dr. Lorna, wife of Dr. William Hylton, a third daughter.

Sime.—On Jan. 30, 1948, to Moyra, wife of Lieutenant David G. Sime, R.A.M.C., Hanover, a son—Michael Jeremy.

MARRIAGES

Gilmore—Muir.—On Feb. 20, 1948, at South Woodford, Haldane Carson Gilmore, L.R.C.P.&S.I., to Margaret MacIntosh Muir (*née* Archibald), M.B., Ch.B.

Krafft—Johnston.—On Feb. 3, 1948, at St. Mary's Church, Prittlewell, Essex, Dr. Gerard Krafft and Dr. Catherine Vallance Johnston.

Stein—Rachwalsky.—On Feb. 22, 1948, Major G. E. Stein, R.A.M.C., to Miss E. L. Rachwalsky, M.B., B.S.

DEATHS

Braithwaite.—Recently, John Braithwaite, M.B.

Creasy.—On Feb. 20, 1948, at Dolphin Square, Rolf Creasy, M.R.C.S., L.R.C.P.

Dalziel.—On Feb. 21, 1948, at 63, Park Road, Chiswick, W., John McEwen Dalziel, M.D., late West African Medical Service.

Deans.—Recently, John Campbell Deans, M.B., Ch.B.Glas., of Glasgow.

Droop.—On Feb. 15, 1948 at Corra, Sandy Lane, Tilford, Surrey, Charles Edward Droop, M.B., B.Ch., formerly of Newton-on-Trent, Lincoln, aged 70.

Fairlie-Clarke.—On Feb. 16, 1948, Allan Johnston Fairlie-Clarke, F.R.C.S., of The Oaks, Graham Road, Malvern, aged 70.

France.—On Feb. 7, 1948, at 38, Darby Crescent, Sunbury-on-Thames, Middlesex, James Hassall France, M.R.C.S., L.R.C.P.

Hamilton.—On Dec. 16, 1947, at Q.A.M. Military Hospital, Horley, Surrey, William Bruce Hamilton, M.D., Major R.A.M.C.

Harris.—On Feb. 16, 1948, at Eden Hall, Minster, Ramsgate, Robert James Harris, M.R.C.S., L.R.C.P.

Healey.—Recently, John Edridge Healey, M.B.E., M.B., Ch.B., of Preston, Lancs.

Henderson.—At 28, Glendale Avenue, Whitley Bay, Percival Henderson, M.D., late of Seghill, Northumberland.

Henery.—On Feb. 16, 1948, at 73, Warwick Road, London, S.W., John Philip Edmund Henery, L.M.S.S.A.

King.—On Feb. 10, 1948, Ralph De Veil King, M.R.C.S., L.R.C.P., of 1, Moor Court Close, Sidmouth, Devon.

Lewis.—Recently, Frederick Charles Lewis, M.R.C.S., L.R.C.P., of Birmingham.

Lowe.—On Jan. 31, 1948, at Ranmore, The Avenue, Middlesbrough, George Harold Lowe, M.D.

McCandlish.—On Feb. 14, 1948, at the London Hospital, Whitechapel, E., Alexander Henry McCandlish, M.R.C.S., L.R.C.P.

McGowan.—On Feb. 16, 1948, collapsed and died while waiting for a bus in Glasgow, Thomas McGowan, M.B., Ch.B.Glas.

Odulate.—On Jan. 31, 1948, killed in an accident in Nigeria, Albert Olukoya Odulate, M.B., B.S., aged 29.

Orr.—On Feb. 7, 1948, at 39c, Northside, Clapham Common, S.W., Henry Scott Orr, M.B., B.Ch., aged 81.

Poole.—On Feb 7, 1948, John Copeland Poole, M.R.C.S., L.R.C.P., of Mayfield, Sussex, aged 78.

Porter.—On Feb. 10, 1948, at 1, Ansdell Road North, Ansdell, Lytham St. Annes, John Herbert Porter, M.B., B.Ch., aged 50.

Riddoch.—On Jan. 30, 1948, in air liner reported missing near Bermuda, George Keith Riddoch, F.R.C.S Ed., aged 30

Ross.—On Feb. 2, 1948, at 327, Park Road, Oldham, Thomas David Coulthard Ross, M.B., Ch.B., aged 63.

St. John.—Recently, Frederic Agar St. John, M.D., F.R.C.S.Ed., of Manchester.

Solly.—On Feb. 19, 1948, at 13, Howell Road, Exeter, Reginald Vaughan Solly, M.D., F.R.C.S., aged 83.

Swan.—At Wine Street, Sligo, Eire, Harold John Swan, M.B., B.Ch.

Teare.—On Jan. 26, 1948, at Liverpool, John Teare, M.D., aged 82.

Wales.—On Feb. 16, 1948, at The Marjorie, Billington, Blackburn, Lancs., Herbert Wales, M.B., B.Ch., aged 70.

Walker.—On Feb. 18, 1948, at Fairfield House, Bradford-on-Avon, Henry Secker Walker, M.Sc., F.R.C.S., aged 84.

Wilson.—On Feb. 9, 1948, at Kingston, Nairn, George Wilson, M.B., C.M.

Wilson-Smith.—William Arthur Wilson-Smith, M.D.Ed., of Whiteparish, near Salisbury, Wilts.

Winckworth.—On Feb. 20, 1948, at a nursing home, Wadham Bruce Winckworth, M.R.C.S., L.R.C.P., of 18, Mount Street, Taunton, Somerset, aged 79.

Winfield.—Recently, Arthur Winfield, M.R.C.S., L.R.C.P., of New Ferry, Birkenhead

Wynn-Williams.—On Feb. 6, 1948, at "Cleveden," Middlesbrough, William Wynn-Williams, M.R.C.S., L.R.C.P.

No. 6

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Feb. 7

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1948					1947 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	56	6	20	2	2	94	8	19	10	7
Deaths		—	—				4	1		
Diphtheria	223	19	55	7	8	233	23	68	20	7
Deaths	4	2	2	—	1	4	1	—	1	—
Dysentery	160	28	39	1	—	49	6	26	4	—
Deaths				1	—				—	—
Encephalitis lethargica, acute	—	—	2	—	—	1	—	—	—	—
Deaths		—					—			
Erysipelas			45	11	1			45	6	7
Deaths		—					—			
Infective enteritis or diarrhoea under 2 years				14					27	
Deaths	38	3	9	5	1	106	13	20	2	1
Measles*	5,596	511	831	121	17	17,258	583	326	66	740
Deaths†			—	2	—	20	1	—	—	2
Ophthalmia neonatorum	63	5	11	—	—	59	3	17	—	1
Deaths										
Paratyphoid fever	6	—	—	—	—	3	—	—	—	1 (B)
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenzal	1,012	64	14	18	7	1,583	111	13	35	12
Deaths (from influenza)‡	25	1	3	—	—	211	30	12	4	7
Pneumonia, primary			279	31				285	49	
Deaths	273	64		21	11		148			14
Polio-encephalitis, acute	6	3				1	—			
Deaths							—			
Poliomyelitis, acute	25	1	6	—	1	10	2	1	7	—
Deaths§	3	1					—			
Puerperal fever		—	7		—		1	6		—
Deaths										
Puerperal pyrexia‖	118	14	12	2	—	115	11	18	—	—
Deaths		—					—			
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,943	110	322	28	42	1,130	68	244	21	30
Deaths†			—	—	—	1	—	—	—	1
Smallpox	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Typhoid fever	12	2	—	8	1	7	—	—	6	—
Deaths	2	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Whooping-cough*	2,572	172	45	36	10	1,842	161	384	66	30
Deaths	11	—	—	1	—	16	4	2	7	—
Deaths (0–1 year)	399	53	60	32	22	672	79	79	44	14
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	5,191	844	685	224	148	8,308	1515	834	408	209
Annual death rate (per 1,000 persons living)			13·8	14·0				17·3		
Live births	7,999	1320	954	418	280	9,547	1534	1191	361	331
Annual rate per 1,000 persons living			19·3	26·1				24·0		
Stillbirths	240	21	25			308	38	39		
Rate per 1,000 total births (including stillborn)			26					32		

* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Deaths from measles and scarlet fever for England and Wales, London (administrative county), will no longer be published.

‡ Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

§ The number of deaths from poliomyelitis and polio-encephalitis for England and Wales, London (administrative county), are combined.

‖ Includes puerperal fever for England and Wales and Eire.

EPIDEMIOLOGICAL NOTES

Tuberculosis in the British Zone

Recent reports from the Control Commission for Germany suggest that the present incidence of deaths from tuberculosis is stationary. In September, 1946, the German public health authorities changed the method of notifying cases of tuberculosis (except in Hamburg, where the change was made in June, 1947) with the result that cases which were neither active nor infectious were included in the returns. This resulted in the incidence of cases being recorded as many times the death rate, and the Medical Research Council sent a team to the British Zone to investigate this disparity. Investigation confirmed that the rise in the reported incidence was almost entirely due to the different methods of notification. We reproduce in the following table some figures supplied by the Control Commission showing the apparently increased incidence of cases reported after the change in the method of notification.

	1946				1947		
	1st Quarter	2nd Quarter	3rd Quarter	Whole Year	1st Quarter	2nd Quarter	3rd Quarter
Lung and larynx:							
Cases reported ..	9,317	11,031	11,041	46,651	17,803	22,822	23,903
Deaths	3,478	3,364	2,380	11,985	3,489	3,287	2,594
Other cases:							
Cases reported ..	1,498	1,858	2,230	8,433	2,590	3,097	2,874
Deaths	410	481	386	1,688	444	574	434

Discussion of Table

In *England and Wales* increases were recorded in the notifications of measles 1,363, acute pneumonia 162, diphtheria 23, and scarlet fever 17, while a decrease was recorded in the incidence of whooping-cough 153 and of dysentery 48.

The largest rises in the notifications of measles were those of London 171, Lancashire 146, Kent 127, and Lincolnshire 111. The only variation of any size in the incidence of acute pneumonia was an increase of 41 in Lancashire. Only small fluctuations occurred in the local incidence of scarlet fever, except for a decrease of 43 in Warwickshire and an increase of 54 in Lancashire.

The chief feature of the returns of diphtheria was an increase in Lancashire of 13. The fall in the incidence of whooping-cough, which has been at the highest level since notification began, was mainly due to the experience of two counties, Yorkshire West Riding and Lincolnshire, where the notifications were 105 and 47 fewer than in the preceding week.

A fresh outbreak of dysentery involving 18 persons was reported from Bournemouth C.B., and the notifications in London rose from 15 to 28. In Lancashire the notifications of dysentery fell from 103 to 43 and in Middlesex from 21 to 5.

In *Scotland* decreases were recorded in the incidence of scarlet fever 33 and measles 54, while increases were reported for acute primary pneumonia 19, whooping-cough 13, and dysentery 10. The largest returns of dysentery were Edinburgh 18 and Aberdeen 11.

In *Eire* the notifications of measles increased by 33 while a decrease occurred in the incidence of whooping-cough 29 and scarlet fever 8. Only 14 cases of diarrhoea and enteritis were notified during the week, the lowest level for two years. The increase in the notifications of measles was mainly due to an outbreak of 38 cases in Mayo, Belmullet R.D.

In *Northern Ireland* the largest fluctuations in the trends of infectious diseases were an increase of 6 in diphtheria and a decrease of 6 in scarlet fever.

Week Ending February 14

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,925, whooping-cough 2,576, diphtheria 211, measles 6,179, acute pneumonia 871, cerebrospinal fever 54, acute poliomyelitis 28, dysentery 164, paratyphoid 2, and typhoid 7.

The Central Office of Information has issued a useful pamphlet entitled *International Economic Organizations* (H.M.S.O., 1s.). Organizations such as Unrra, W.H.O., and F.A.O. are listed and notes about their constitution, purpose, and activities appended. A useful table at the end shows how many delegates each country elects to the various organizations. Those interested in the post-war international machinery of relief will find this a useful publication.

Any Questions?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions, which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Pathology of Lumbago

Q.—*What is the pathology of lumbago? Is it always due to dislocation of the lowest intervertebral disk? I know that sciatica is in many cases due to that cause, but it is not the only cause. I know of a case treated for sciatica which was found later to be due to osteomyelitis of the upper part of the ilium.*

A.—It is now accepted fairly widely that acute lumbago, especially if recurrent, is caused in a high proportion of cases by backward bulging or prolapse of a lumbar intervertebral disk. The disk affected is usually that between L.4 and L.5 or that between L.5 and S.1, though less commonly the disk at other levels may be responsible. When lumbago is present without sciatica it is probable that the bulging of the disk is so placed, or is of such slight degree, that the root components of the sciatic nerve escape pressure or stretching. This conception of the pathology is supported by the clinical observation that acute lumbago is very commonly followed after an interval by sciatica, with the usual signs of nerve-root irritation, and by the fact that a prolapsed disk has often been found at operation in cases of recurrent lumbago.

While the majority of cases of lumbago can probably be accounted for in this manner it is important to realize that the symptoms of lumbago and of sciatica may be due to a variety of other conditions, including spondylolisthesis, intraspinal tumour, pelvic tumour, ankylosing spondylitis, and tuberculous or pyogenic infection of the spine or sacro-iliac region. It is therefore clearly essential that a full orthopaedic examination, including skiagrams of the spine and pelvis, be undertaken before a diagnosis of prolapsed intervertebral disk is made. A useful clinical point to remember is that a history of *recurrent* attacks of pain, with intervals of relief or freedom from symptoms, is suggestive of a disk protrusion; symptoms which are continuous and of progressively increasing intensity suggest that some more serious pathological process may be present.

Choice of Sulphonamides

Q.—*In the Medical Research Council's booklet on the use of sulphonamides it is stated that these drugs have no specific action but their efficiency varies with their potency. If this is the case, surely the simplest scheme would be to use only the latest and best—i.e., sulphamezathine, a drug from the use of which anuria has never been recorded and which can be given six-hourly?*

A.—The choice of a sulphonamide for the treatment of any particular condition may be influenced by several considerations: the duration of effect of a single dose, freedom from toxicity, and liability to deposition in the urinary tract vary in relative importance from case to case. Apart from this and despite the statement quoted, clinical experience suggests that the order of activity of different sulphonamides against individual species of bacteria is not always the same. To take the important example of gonorrhoea, it is explicitly stated in the publication quoted (M.R.C. War Memo No. 10, "The Medical Use of the Sulphonamides," 2nd ed., 1945) that sulphadimethylpyrimidine (sulphamezathine) has been found inferior to sulphathiazole or sulphadiazine in treating this disease, although, for other reasons, its use is recommended for treating urinary tract infections in general. Other observations of the superior effect of a particular drug in the treatment of a particular infection are numerous and doubtless often well founded. It is not suggested that these differences are specific—they are simply quantitative. It is a common and useful practice to test the sensitivity of the patient's own organism *in vitro* to several different sulphonamides before beginning treatment, in order to determine which is likely to be most effective.

Pessaries for Prolapse

Q.—*Can you advise me on (a) the choice of pessary in prolapse, (b) the method of estimating the size required, (c) the mode of introduction?*

A.—The choice of pessary depends to some extent on the type of prolapse which is present. Rigid vulcanite appliances, although cleaner, are satisfactory only for minor degrees of prolapse associated with a strong perineum, and the ordinary rubber-ring pessary is probably the best for general use. The size is assessed according to the length of the vagina and its width at both upper and lower ends. The pessary must be so large that it will not fall through the introitus, yet it must be small enough to fit well into the upper vagina without undue tension and not compress the urethra. With the pessary in place the distance between its lower edge and the external urethral meatus should be at least one fingerbreadth. Several sizes of pessary may need to be tried before the best fit is obtained, but with increasing experience it is usually possible to get very near to the correct size at the first attempt. After sterilizing the pessary by boiling, it is gripped between the thumb and second finger to decrease its width and is inserted with the widest diameter in the long axis of the vulva, avoiding pressure on the sensitive vestibule and urethra. The first finger is used to steady the pessary. When the ring is well within the vagina it is released, whereupon it naturally makes a right-angled turn to lie across the vagina. If necessary it is then manipulated to encircle the cervix. If the new "sorbo"-rubber pessary is used there is no difficulty in compressing it to such an extent that it enters the vagina with a minimum of discomfort. The older watchspring pessaries are more resistant, although boiling increases their suppleness. For these there is, or used to be, on the market an instrument (little used) which grips the pessary for insertion and can then be withdrawn, leaving the pessary to expand in the vagina.

If the perineum is so deficient that it will not support a pessary within the vagina some sort of stem pessary (supported by straps attached to a waistband) may be required. There are many kinds; none is completely satisfactory, and the Napier rubber cup and stem is probably as good as any. The cup, which is saucer-shaped, is, like ring pessaries, sized according to its overall diameter. Before ordering such a pessary a ring pessary can be used to estimate the size required. However, it is a good plan to choose a comparatively small cup, because it is not very dependent on its size for its stability, and if it is small the patient can easily learn to insert and remove it herself. If she can do this then she should be told to remove it each night on going to bed and to wear it only during the day.

Vitamin D in Virus Diseases

Q.—*Some years ago I found that vitamin D, 50,000 units a day in divided doses, turned off catarrh of mucous membranes in 30 minutes and was an effective remedy for colds. A small dose of 4,000 units has to be taken at first to eliminate toxic reactions. I have read of certain virus complaints being improved with adrenaline and calcium. What experiments have been done with regard to vitamin D in virus diseases such as poliomyelitis?*

A.—There have been isolated reports stating that vitamin D is of value in the treatment of colds, but they are based on clinical impressions and not on controlled observations. Vitamin A has often been given as well. So far as the writer knows, no work has been done on the use of vitamin D in poliomyelitis. In the present state of our knowledge there is no rationale for its use in virus infections.

Aseptic Inoculation Technique

Q.—*What is the most expeditious aseptic technique for inoculating large numbers of men against cholera, assuming that no facilities for sterilization are available?*

A.—It is now generally recognized that no inoculation technique is entitled to be described as aseptic unless a separate needle is used for each injection. Thus the only possible answer to the question is that there should be as many needles as men, previously sterilized by dry heat. A suitable metal container for large numbers of needles used in this way is illustrated in Medical Research Council War Memorandum No. 15 ("The Sterilization, Use, and Care of Syringes"). The only alternative is to provide the means for boiling a limited number of needles for repeated re-use; surely a sterilizer, some distilled water, and a spirit-lamp or "meta" fuel could be taken even to the most primitive and outlandish place?

Thorium X for Treatment of Baldness

Q.—*I should be grateful for details of the treatment of baldness by thorium X. What are the risks and dangers, if any?*

A.—It has been a fashion to treat alopecia with thorium X, but there is little evidence of its value except on a psychological plane. An alcoholic solution (1,500 electrostatic units per ml.) is painted on the scalp at monthly intervals. It should not be continued beyond twenty or so applications. Telangiectasis and atrophy have been observed where treatments have been continued over several years.

Heparin and Dicoumarol in Thrombosis

Q.—(*a*) *What is the correct treatment for a patient with severe thrombophlebitis in the leg and thigh who is treated at home? Can heparin be used in general practice with safety?* (*b*) *Can you suggest some scheme for the treatment of femoral thrombosis by means of heparin and dicoumarol? What is the appropriate dosage, and for how long should the treatment be continued? How is the dosage controlled by the prothrombin index?*

A.—(*a*) If the phlebitis is superficial the treatment should be ambulatory, the legs being strapped from above the thrombus down to the toes after sponge-rubber or adhesive-felt strips are placed over the inflamed veins. Heparin and dicoumarol treatment is as follows: On the first two days of the illness heparin injections should be given thus: 12,500 units at 8 a.m., 10,000 at 1 p.m., 10,000 at 6 p.m., and 12,500 at 11 p.m. Dicoumarol 250 mg. should be given each day for the first three days and 200 mg. on the 10th, 11th, 12th, 20th, 21st, and 22nd days of the illness. Prothrombin times should be slightly more than doubled, and can be taken as often as possible after the fifth day. The doses mentioned are increased or diminished according to the prothrombin time. If the phlebitis is deep the patient is kept in bed for 7 to 14 days, the lumbar ganglia are blocked with "novocain" at the onset, heparin and dicoumarol therapy is given as for the superficial type, and when the patient gets up supporting bandages are used to control the oedema.

(*b*) Treatment by means of heparin and dicoumarol should be as in (*a*). Lumbar sympathetic block should never be omitted at the onset of femoral thrombosis.

Castration or Stilboestrol for Prostatic Cancer

Q.—*It is well known that oestrogens (especially stilboestrol) are effective in some cases of carcinoma of the prostate. The exact mode of action is so far unknown, but the theory is that the oestrogens inhibit secretion of anterior pituitary gonadotrophin, thus decreasing the secretion of testosterone by the interstitial cells of the testes; this disturbs the metabolism of normal prostatic tissue but also of the malignant tissue, and improvement occurs. Now castration produces marked prostatic atrophy with degeneration in the glandular cells by stopping the supply of testicular androgen. In this case the metabolism of the prostatic tissue is even more violently upset than by the administration of oestrogens. Would castration, therefore, not be a more potent weapon to attack prostatic cancer than oestrogen therapy?*

A.—Castration, or surgical castration, is effective in retarding prostatic carcinoma and has been used for many years. Oestrogen therapy, as the questioner points out, is a form of effective physiological castration which, however, does not seem to help relapses after surgical castration. Unfortunately, most patients tend to relapse after a period, whether the castration is surgical or physiological. It has been postulated that the adrenal cortex continues to secrete androgens, or secretes them in greater quantities than previously, and that this is the explanation of the relapses. Although the former supposition has proved correct, the latter does not appear to be true because such cases have had bilateral adrenalectomy performed without

arresting the progress of the prostatic carcinoma. Therefore there seem to be two factors—hormone and intrinsic neoplastic stimulus—the nature and control of which still require elucidation.

Surveillance after Treatment of Syphilis

Q.—My queries are, first, does giving "ametox" and arsenic mixed in the one injection inactivate the arsenic? I have always thought it did, but have heard this contested. Secondly, what is the latest advice about the duration of surveillance after penicillin therapy and the advisability of any further treatment?

A.—Ametox does not inactivate arsenic, if by "inactivate" is meant neutralize its therapeutic properties. Few syphilologists nowadays regard ametox as of any value in reducing the toxic effects of arsphenamines.

After penicillin therapy of *early* syphilis it is usual to test the patient's blood serum monthly for six months and thereafter twice at three months' and twice at six months' intervals, making a total surveillance period of two years. The cerebrospinal fluid should be examined six and 24 months after completion of treatment, and, of course, a careful clinical examination should be carried out each time the blood is tested.

Calcium by Mouth

Q.—In what form is calcium best absorbed when given by mouth?

A.—Calcium is best absorbed when given by mouth as calcium lactate, or as a mixture of calcium lactate and sodium lactate. This statement is based on the results recorded by Wokes (*J. Pharmacol.*, 1931, **43**, 531).

Phosphaturia and Oxaluria

Q.—Are phosphaturia and oxaluria the same condition? What relation, if any, have they to acne rosacea, fibrositis, insomnia, cyclic insanity, or other nervous disorders? What is the treatment of frequent micturition in these conditions? Are bladder sedatives, such as ol. santali, ol. cubeba, etc., advisable in addition to standard treatment? Can you give details of diet for treatment of oxaluria? The textbooks are rather contradictory.

A.—Phosphaturia and oxaluria are separate and unrelated conditions: in the first there is a precipitation of phosphates in the urine due to a change in reaction to the alkaline side, and often to an excessive excretion of phosphate; in the latter undue quantities of oxalate are present, and crystals of the calcium salt are deposited. There is no good reason to suppose that either of these urinary anomalies is in any way related to the conditions mentioned. Increased frequency of micturition can seldom be attributed direct to oxaluria or phosphaturia; more often both have a common cause. Phosphaturia frequently accompanies *Proteus* infections of the urinary tract. Calculus may declare itself by frequent micturition combined with either oxaluria or phosphaturia. Rational management requires consideration of all these possibilities. The indications for treatment of oxaluria are to facilitate the solution of oxalates by increasing the acidity of the urine, and to decrease the intake, and thus the excretion, of oxalate. Rhubarb, spinach, gooseberries, and carrots are rich in oxalates.

Absence of Orgasm

Q.—A normal middle-class housewife aged 39, with one child, has been married 10 years but has hitherto failed to achieve an orgasm during sexual intercourse. The preliminary part of coition is enjoyable, but she feels frustrated at the end of the act owing to lack of success. Titillation of the clitoris produces sexual excitement, but the vagina seems to be entirely devoid of sensation. The insensitiveness of the vagina is confirmed by clinical examination. What is the cause of this lack of sensation, and what treatment do you suggest?

A.—Whereas men obtain pleasure and satisfaction from sexual relations spontaneously, women for the most part have to learn to do so—and the teacher is usually the husband. Mainly as the result of ignorance and faulty education, a large percentage of women never experience orgasm. So far as the genital organs are concerned, the areas which are most responsive to erotic stimulation are the clitoris and the vagina, and as a rule sexual pleasure is more easily aroused and developed in the former, although it is less intense. Women vary a good deal, but it is common to find that in the early days of marriage pleasure and orgasm are dependent mostly on stimulation of the clitoris, whereas with increasing experience the more satisfying vaginal orgasm is developed. The two orgasms are said to differ in type and degree. The history of this case suggests that the woman's education in sex has never developed beyond the early stages, and it is most unlikely that there is any local organic cause for it. Sensitivity of the vagina to touch and pain is usually low. One possibility, however, which should be excluded is an overstretched and gaping vagina dating from childbirth. It may be difficult to change matters now the marriage has gone on so long, but if it is impossible to arouse a vaginal orgasm, more satisfactory stimulation of the clitoris might be achieved by varying the posture during coitus. This couple might benefit by reading *Ideal Marriage*, by Th. H. Van de Velde, 1944, London, in which these matters are discussed in detail.

NOTES AND COMMENTS

Enuresis In Young Adults.—Dr. ROBERT BAUER (Cardiff) writes: With reference to Dr. J. K. Pameijer's letter (Jan. 31, p. 238) the epidural injection of "novocain" for enuresis (nocturnal and diurnal), but in a concentration of 0.25% and dosage of 10–30 ml (and more), has been used in Vienna for several decades. One precaution seems indicated—to ascertain the absence of epilepsy. Years ago in Vienna I treated a patient of about 45 years with no other neurological signs except urinary incontinence, and observed after the third injection a fit of grand mal immediately after the injection. There was, however, no further attack though I continued to keep the patient under observation for another 12 months. No further injections were given and the incontinence was much improved.

Lower Cervical Spondylarthrosis.—Dr. J. B. BENNETT (Bath) writes: In answer to the question on osteoarthritis of the cervical spine ("Any Questions?" Feb. 14, p. 330) mention was not made of a common aetiological factor. In my experience osteoarthritis confined to the cervical vertebrae is nearly always associated with trauma. In most cases the patient has forgotten the incident, which is commonly a throw from a horse or similar accident involving the head and neck. The injury results in such a slight degree of concussion that an *x* ray was not thought essential at the time, but the patient recalls a stiff neck which persisted for some time. Simple manual extension of the neck with the patient in a sitting position, and accompanied by gentle manipulation of the neck, usually affords at least temporary relief.

Laurel Berries.—Lieut.-Col. H. S. ANDERSON, R.A.M.C.(ret.), writes from Parkstone, Dorset: The answer under the above heading ("Any Questions?" Feb. 14, p. 330) recalled a non-fatal poisoning case of long ago. About "Laurel"—viz., the spurge- or wood-laurel, *Daphne laureola*—George Nicholson, sometime curator at Kew, wrote in his *Encyclopaedia of Horticulture*: "The berry of this species is very poisonous." I suggest the safe rule of regarding the berries of *Rosaceae* as harmless and those of *Thymelaceae* as dangerous. The true laurel belongs to the latter natural order, and *Prunus laurocerasus* to the former.

Disclaimer.—Lord HORDER (London, W.1) writes: An article entitled "The Doctor," accompanied by a photograph of myself, appeared in the Feb. 8 issue of the *Leader*. I shall be grateful if you will allow me to say, through your columns, that the article appeared without my knowledge or concurrence. On being approached the Hulton Press declines to state this fact in the journal where the article was printed.

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